CONVENTION NUMBER

THE HEATING AND VENTILATING MAGAZINE

Vol. IX. No. 7.
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NEW YORK, JULY, 1912

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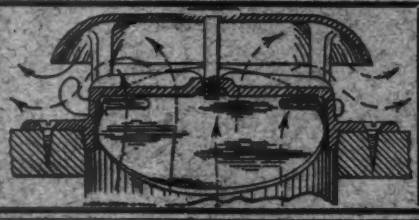

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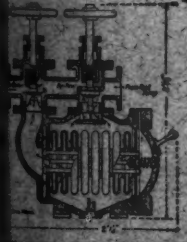

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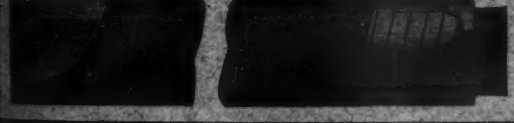

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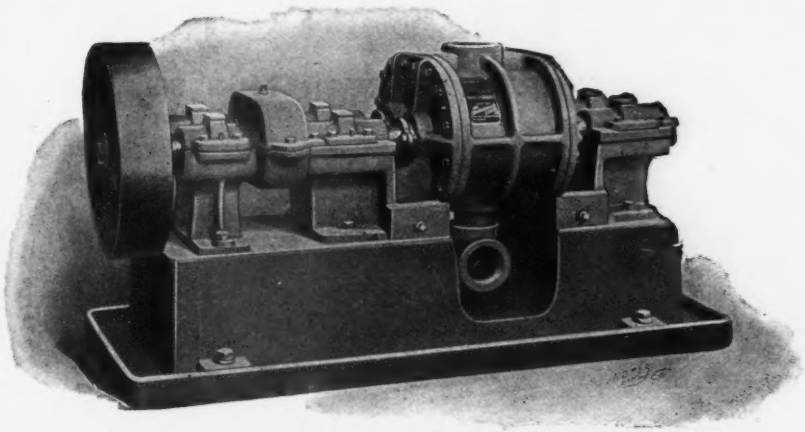

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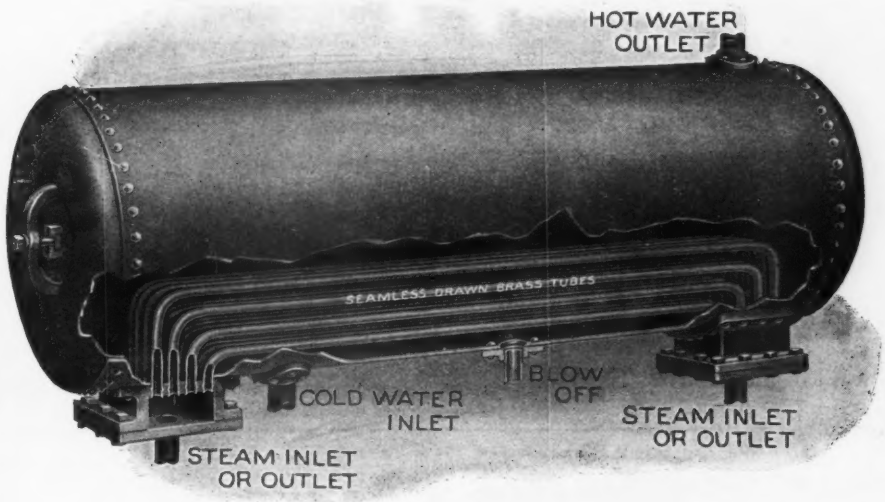

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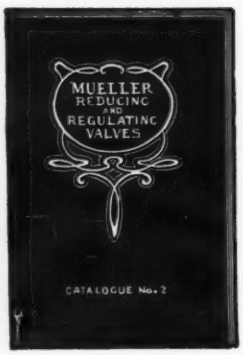

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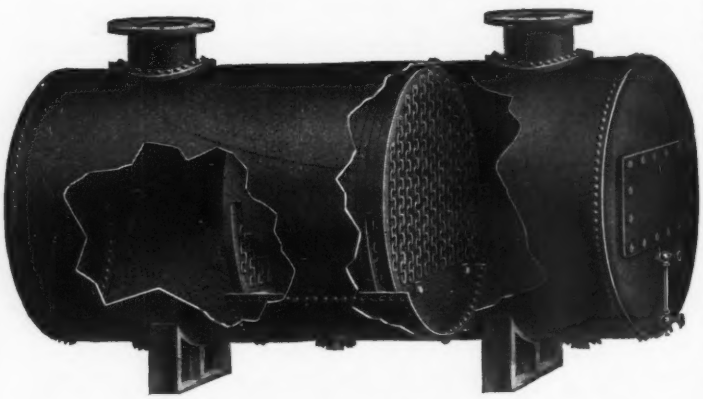

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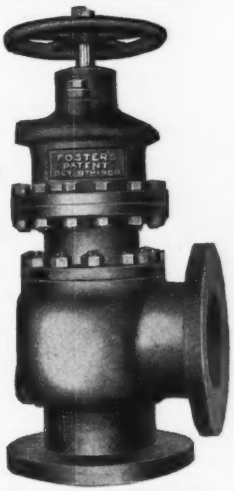

Foster Automatic Non-Return Emergency Stop Valve

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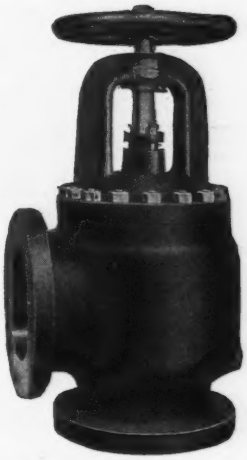

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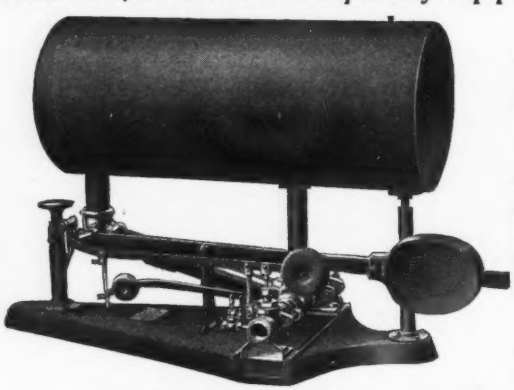

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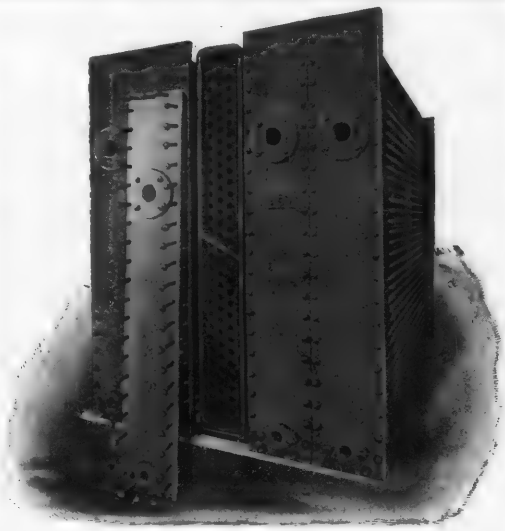

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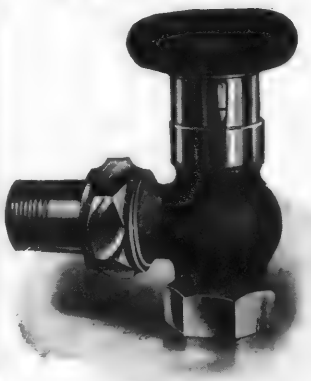

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The Heating and Ventilating Magazine

VOL. IX. No. 7

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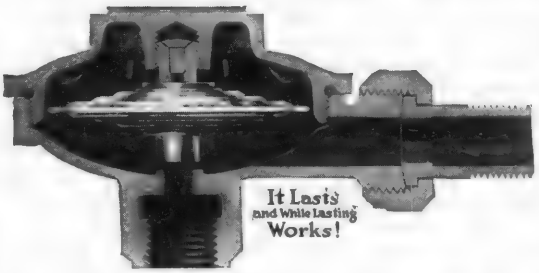

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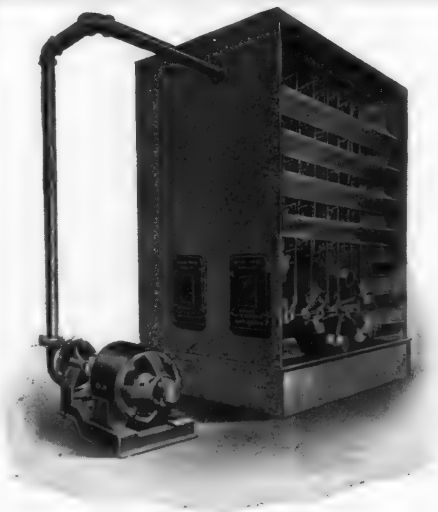

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THE HEATING AND VENTILATING MAGAZINE

1123 BROADWAY NEW YORK JULY, 1912

Heating and Ventilation of the Little Theatre

AIR SUPPLY FOR 283 PERSONS IN PRACTICALLY AN HERMETICALLY SEALED ROOM

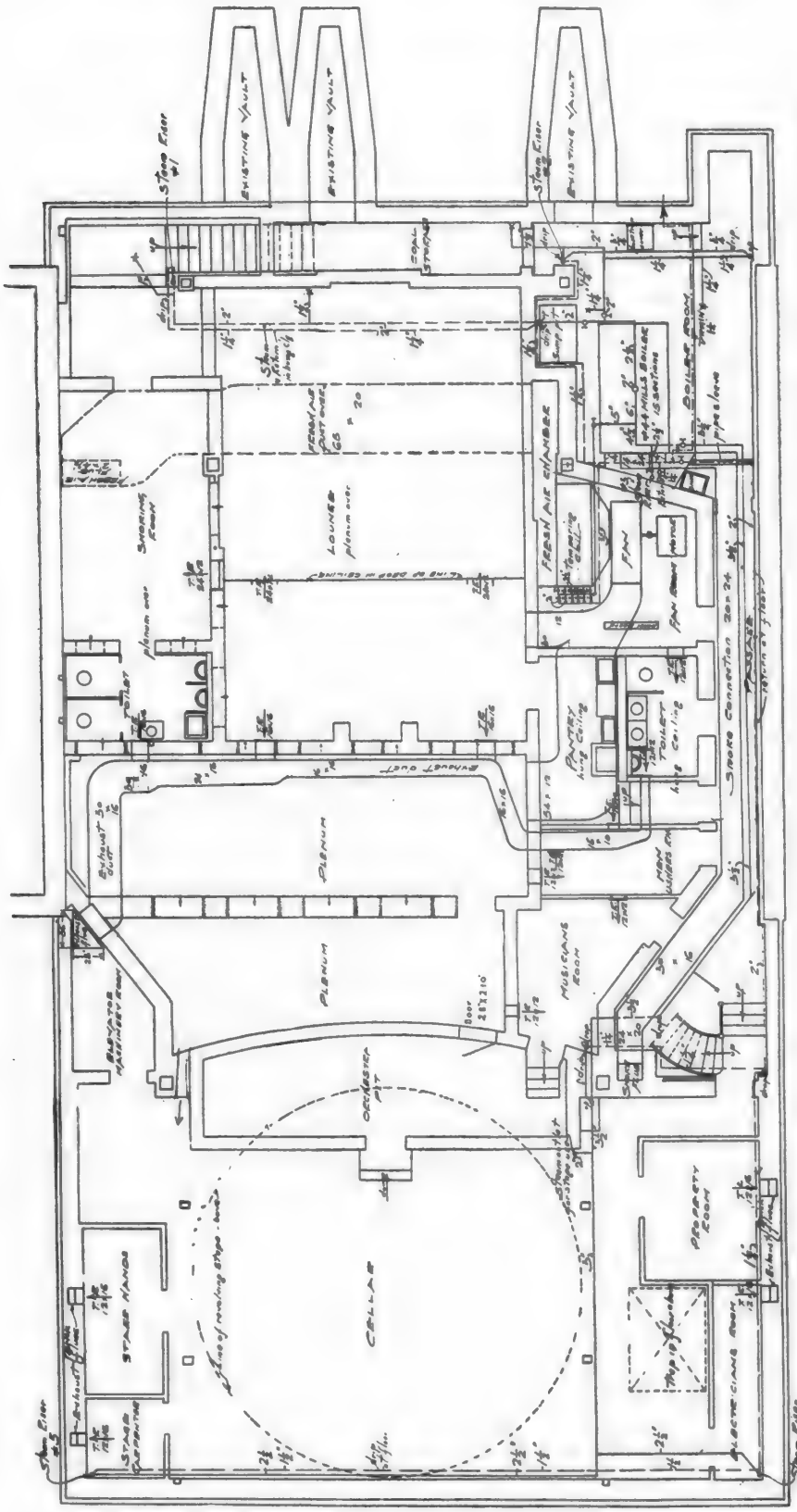
As good an example of an hermetically sealed room as could easily be found is the auditorium of the Little Theatre, at 240 West Forty-fourth Street, New York. The room is entirely without windows or exposed wall or ceiling surface of any kind, and, when the audience is seated and the doors closed, there is almost no source of air supply other than that furnished by the mechanical system of ventilation with which the theatre is equipped.

Aside from the architectural features of this unique playhouse, which are noteworthy even among New York's many fine types of theatre buildings, the Little Theatre typifies a development of design that is coming more and more into favor for this class of buildings; namely, compactness, small seating area and drawing room effects designed to bring the auditors into closer touch with each other and with the players. There are no boxes or balconies, for instance, and the height of the ceiling is but 26 ft. above the floor. The whole area of the auditorium is 2,260 sq. ft., which makes the total air space 59,000 cu. ft.

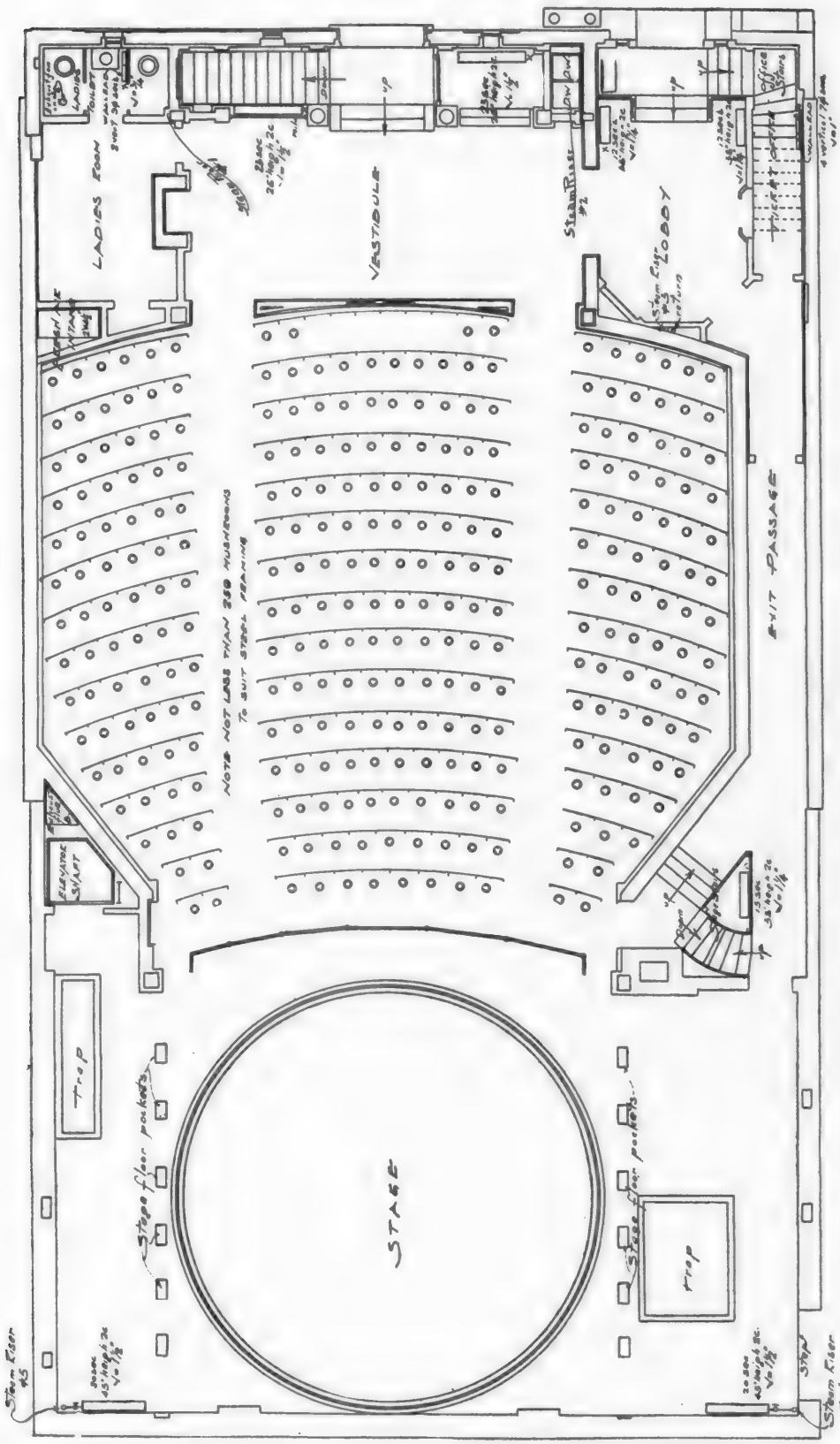
The theatre contains 283 seats, which, under the conditions stated, offers a simple but interesting problem for the maintenance of a sufficient supply of fresh air. Owing to the absence of wall, glass or ceiling heat losses, the problem resolved itself in-

THE LITTLE THEATRE, NEW YORK.

to a matter of keeping the temperature down rather than up while maintaining the air at a sufficient degree of purity. To accomplish these two objects, it was found necessary to figure on raising the temperature of



BASEMENT FLOOR PLAN, LITTLE THEATRE, SHOWING HEATING AND VENTILATING LAYOUT, ALSO AIR SUPPLY OPENINGS MADE IN OLD FOUNDATION WALLS.



GROUND FLOOR PLAN OF LITTLE THEATRE, SHOWING INDIVIDUAL AIR OUTLETS BENEATH SEATS.

the incoming air to a point not over 65° F. in order to keep the room temperature at 72° F. This raises an interesting question as to whether interiors of this sort could not be so built with reference to tightness and exposed surface that it would never be necessary to heat the air supply above 60° or 70°, a feat that would go far towards meeting the points raised by modern critics of ventilation methods whose principal objection to present practice lies in the "overheating" of the air supply.

neers were not sufficient to permit of the installation of an elaborate design. The system is notable principally as showing the economies effected in producing mechanical ventilation to meet the essential requirements of the building at a minimum cost.

One of these economies is to be seen in the basement plan. The Little Theatre was built on the site of a number of private dwellings. Some of the basement walls were left standing and these were utilized to provide plenum chambers for the air sup-

AUDITORIUM OF THE LITTLE THEATRE, NEW YORK, LOOKING FROM THE STAGE.

Inasmuch as the incoming air in the auditorium is admitted directly beneath the seats, it is not desirable to lower the temperature of the air supply below 65° owing to the liability of causing discomfort to the audience.

It should be stated in connection with the plans for heating and ventilating this building that the funds at the disposal of the designing engi-

ply. In addition, openings, cut at points along the upper parts of the walls, serve as air outlets to such rooms as the lounging room and to points underneath the stage. A hung ceiling directly below the floor of the auditorium contains the exhaust ducts from these rooms and the ducts are carried through the plenum chamber to the exhaust shaft as shown.

As stated, the air for the auditor-

ium is admitted through individual outlets underneath the seats. Each of of these outlets is capped with a Knowles mushroom ventilator having an inside diameter of 4¾ in., which serves both to regulate and diffuse the flow of air.

The outgoing air is exhausted through openings in the ornamental cornice at the ceiling, passing thence to the space directly above the auditorium. Here the original building plans called for box steel girders which would have divided the space into separate compartments. At the suggestion of the engineers, latticed steel girders were substituted, making one large compartment of this space, permitted it to be utilized as an exhaust air chamber. With this arrangement connection is made to the exhaust shaft through a single opening. The exhaust shaft, as will be seen, runs to the roof where the air is drawn out by means of a Blackman exhaust fan.

TEA ROOM IN LITTLE THEATRE, NEW YORK, DIRECTLY BELOW VESTIBULE AND PART OF AUDITORIUM.

The system used is low pressure steam and, in addition to the indirect air supply system for the auditorium, there are 32 direct radiators and coils located in the lobby and other parts of the building, having a total of 1,500 sq. ft. of heating surface. A Mills cast-iron sectional steam boiler, having a rated capacity of 8,400 sq. ft. of radiation was installed. The additional capacity, takes care of the tempering coil for the auditorium air supply. The blower in the basement is a full-housed Sturtevant steel plate centrifugal fan having a blast wheel 54-in. in diameter. The fan is rated to deliver 11,500 cu. ft. of air per minute when operated at 290 R. P. M. The tempering coil is of the Sturtevant miter type, made up of six 2-row sections, 3 ft. high by 8 ft. long, containing a total of 1,800 lineal feet of 1-in. pipe.

A Sturtevant ventilating set is also installed in the ladies' toilet room

on the first floor, consisting of a fan with direct-connected motor operating at 1,150 R. P. M.

The exhaust fan on the roof is of the Blackman type, 42 in. in diameter. Both the supply and exhaust fans are operated by Garwood electric motors. The motor for the centrifugal fan has a capacity of 5 H. P. at a maximum speed of 290 R. P. M. while the disc fan motor is of 2 H. P. capacity, at a maximum speed of 450 R. P. M. The motors are designed for armature control and are provided with Cutler-Hammer regulating devices, allowing the motors to be operated at variable speeds ranging from one-half to full speed.

The cold air supply for the building enters through the side of a housing on the roof, provided with 24 oz. copper louvres. This housing has hinged doors over the opening of 24-oz. copper, with latches and attachments to hold them open or closed as desired. The disc fan discharge outlet in the wall of the fan room is protected by a 24-oz. copper hood, with doors similar to those for the fresh air intake housing.

The exhaust air flue from the ladies' toilet room is carried up separately.

The architects of the Little Theatre are Harry Creighton Ingalls and F. Burrall Hoffman, Jr. The heating and ventilating system was designed and installed by George A. Suter & Co., New York, who were recently succeeded by the Child & Scott Co.

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*Sectional Steam Heating in Chicago**

By S. Morgan Bushnell.

With the growth of the central station lighting and power business in Chicago, and the consequent development of great power stations, there came about a gradual increase in the size of the buildings served by the lighting company. As these larger buildings, one by one, began to use central station service for light and power, there arose a demand for a company which would complete the cycle by providing for the heating of buildings, thus enabling owners to buy the three forms of energy required in the operation of a building, namely, heat, light and mechanical power. To supply this need a company was organized in Chicago in 1900, called the Illinois Maintenance Company.

OPERATES BOILER PLANTS ALREADY INSTALLED IN BUILDINGS.

This company has operated on a scheme somewhat diverse from that followed by the majority of steam heating companies. It has installed no plants of its own and, with one or two exceptions, has installed no boilers. It simply contracts to operate boiler plants already installed in buildings, so as to furnish steam for heating and other purposes. This scheme at first sight might seem like a radical departure from the ideas thus far entertained by the steam heating companies. It might be thought that the central station idea was being lost sight of and that a policy of decentralization, rather than centralization, was being adopted. To a certain extent this is true, but it must be borne in mind that the conditions to be met in the central parts of larger cities are radically different from those in smaller towns.

DIFFERENCE IN EFFICIENCY BETWEEN POWER AND HOUSE HEATING BOILERS.

The heating company in the smaller town which conducts a house to house business has much in its favor. In the first place, there is a marked difference in economy between the small heating boilers and the large heating boilers of from 300 to 500 H.P. found

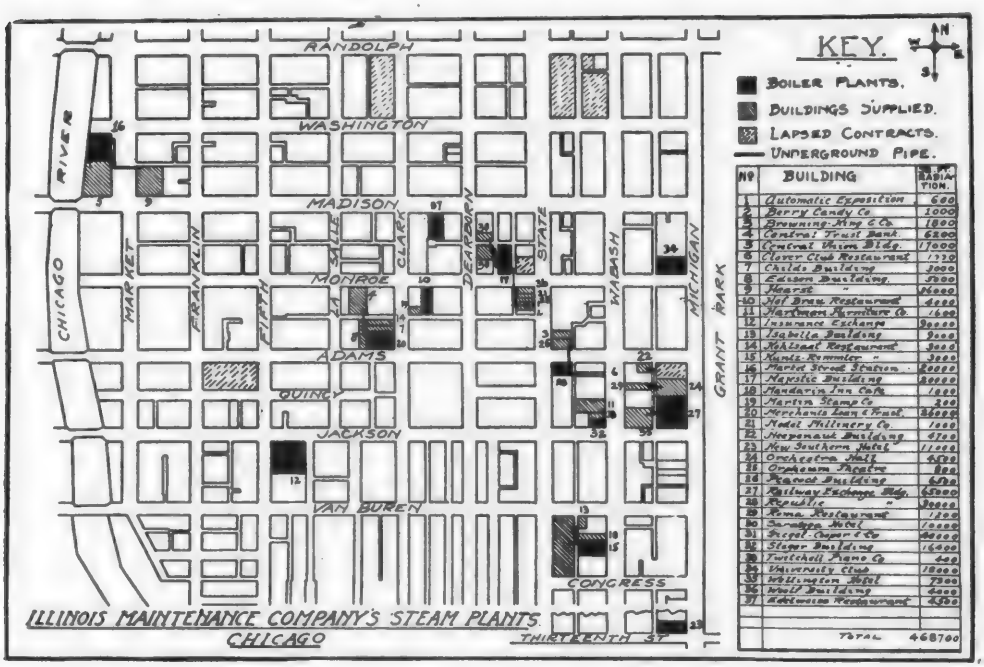
*Read before the National District Heating Association, at Detroit, Mich., June 27, 1912.

in central stations. Careful tests which have been made on house-heating boilers of 25 H.P., under test conditions, show an average efficiency somewhere in the neighborhood of from 40 to 50%. It is probable that under ordinary working conditions the percentage would be even less, perhaps might fairly be assumed at 35%. There are a great many tests on large size boilers which show efficiencies running between 70% and 80%. If we assume an average working efficiency on the larger sizes of boilers of 65%, we would have right here a difference of nearly 100% between the pounds of steam per pound of coal secured in a large installation as compared with the results in a small househeating installation.

Furthermore, small residences and stores find it somewhat impracticable to burn soft coal and usually adopt anthracite on account of its comparative cleanliness, reduced danger from explosive gases, and the greater ease of controlling the fire. While there is not a very great difference in the amount of heat producing units contained in the anthracite and the better grades of bituminous coal, the anthracite costs fully 100% more.

Multiplying these two factors together, we find that the ordinary householder will pay four times as much money for a given amount of heat units produced in his boiler as the central station manager would have to pay for the same number of heat units. In such cases, therefore, there is a saving in central station operation which can offset a considerable expense through fixed charges on investment, distributing losses, etc., and still leave a margin of profit for the station.

In the business centers of large cities like Chicago and New York, however, the conditions are very different. The tall office buildings found in the downtown sections are equipped with boilers ranging from 100 to 400 H. P. capacity. Their efficiency will probably average at least 55%. They are supplied in most cases with automatic furnaces which are adapted to the use of the cheaper grades of soft coal. The only advantage, therefore, to be gained from the coal standpoint would lie in the comparatively small



MAP OF LOOP SECTION OF CHICAGO, SHOWING HEATING PLANTS OPERATED BY THE ILLINOIS MAINTENANCE CO.

difference in efficiency, between the medium-size boiler and the very large boiler. But this is not all. While we have gained only a comparatively small amount in efficiency by the substitution of central station boilers, the difficulties of steam transmission in a large city like Chicago, where the streets are already occupied with pipes and conduits for various other utilities, make the cost of transmitting the steam very high.

LARGE STEAM GENERATING PLANT IN CHICAGO WOULD NOT BE PROFITABLE.

From time to time estimates have been prepared on the cost of installing a large steam generating plant in Chicago, but thus far no one has seemed to be able to figure out enough profit from the operation of the larger plant to offset the heavy investment expenses that would be required. It has, therefore, been the policy of the steam company in Chicago to operate steam plants for only a very limited territory, using one set of boilers for a single building or for several adjoining buildings.

The accompanying sketch, Fig. 1, shows a map of the loop section of Chicago, and gives a fair idea of the various heating plants operated by the Illinois Maintenance Company. It will be noted that in a number of cases several buildings have been connected to one set of boilers, while each building—as a rule—retains its own boiler, or boilers, for use in case of emergency or in extremely cold weather. Although in some instances the company operates boiler plans for single buildings, these contracts were taken with a view to combining the building with other buildings in the vicinity as soon as contracts could be negotiated.

This company secures to a certain extent the same advantage in the employment of labor that is obtained by a central plant. All the boiler plants are under the supervision of a first-class operating engineer, who employs the men. This man, whose title is General Engineer, visits all of the plants daily, watches the general upkeep and the handling of the boilers by the men, and also keeps close account of the consumption of coal. He has an assistant, who acts not only as assistant in visiting the plants, but also as an emergency man to assist in any plant that may be temporarily short-handed. This assistant also makes night inspections of the plants to see that the night engineers are as strict in the performance of their duties as the men on the day shifts.

The entire operating department is under the charge of a superintendent, who reports directly to the manager of the company. It is the duty of the superintendent to keep a general supervision over all the plants, visiting them from time to time, and paying special attention to coal deliveries, so as to insure the proper amount and quality of coal in each plant.

While the company patronizes the local coal companies in the city, it does not depend entirely upon them, but maintains an independent coal yard and supplies a large part of its coal from this source. The coal is bought by the carload and delivered from the team track, or from the storage pile maintained in the yard, direct to the plants. Fig. 2 is a view of the yard taken last April.

CONTRACTS BEING CHANGED FROM FLAT RATES TO METER RATES.

The company originally operated entirely on flat rate contracts, furnishing steam service to each building at a certain fixed price per year. This method of selling steam has been unsatisfactory, and the contracts are being changed as fast as practicable to a meter basis. In the smaller buildings one of the ordinary types of condensation meters is used, while in the larger buildings steam is measured at high pressure by means of St. John meters.

At first there was some difficulty in persuading customers to purchase steam on a meter basis, owing to their ignorance of the cost of steam and also of the amount of steam required. The company during this past year has prepared a printed form of contract which includes a sliding scale of rates for steam, and it has been very much easier to close contracts on a

meter basis since the adoption of the printed form. A number of contracts have been closed on a meter basis this last year, and one large contract for a building containing upwards of 90,000 sq. ft. of radiating surface has been signed up and the business taken on in the past month.

METER RATES LOWER THAN IN NEW YORK AND OTHER LARGE CITIES.

The rates charged by the company for steam are considerably lower than the meter rates in New York and other large cities. This is due mainly to the fact that the company has little or no investment costs on which to figure a return.

LITTLE STEAM PIPING IN STREETS.

Thus far there has been very little steam piping done in the streets, most of the work done up to the present time being to connect buildings on opposite sides of a street or alley. As the field of the company's operations gradually extends, there will probably be a somewhat more elaborate system of street connections installed, the plan being to shut down some of the plants which are now running all summer long, in order to cut down the cost of labor.

The company found at first some prejudice on the part of customers against the idea of turning over their boiler plants to an outsider for operation. This prejudice, however, has very largely disappeared, and some of the best architects in the city advise their clients to turn over their heating plants to the company for operation. The company has thus far been very fortunate in operating a number of plants without serious mishaps. More than fifty boilers are now in charge of the company, but probably less than half of these are in use at any one time, on account of the method of operation.

The experience of the company in operating boiler plants has shown that the average steam plant in a store or office building is operated with considerable waste and that careful superintendence will show economies which, taken together, will amount to considerable. These economies, however, are largely offset by waste on the part of a customer when steam is sold on a flat rate basis.

BUSINESS GRADUALLY GETTING ON PROFITABLE BASIS.

The operation of these plants has not thus far been financially successful. The line of work being a comparatively new one, there were a great many things to be learned by experience, both in handling the plants and in negotiating with customers. The net loss in operation, however, has been gradually reduced, and the outlook for the company appears to be more promising now than at any time since it was organized.

Some one has called this system of heating "Heating from Decentralized Plants." This is true only to a very limited extent. The work of the company would more properly come as a division under the head of "District Heating," only the districts are much smaller than those usually served from heating stations. It is expected, however, that as the plans of the company develop, some of these districts will be considerably enlarged and that from year to year additional buildings will contract for their heating from these centers.

For example, in the case of the Insurance Exchange Building on Jackson Boulevard and Fifth Avenue there are now installed four 350 H.P. boilers. Space has been provided, however, so that this installation can be considerably increased, if desired. The stack and breeching have been designed of a capacity for nearly 3,000 H. P. Negotiations have already been entered into with some of the surrounding buildings to provide steam from this source, and as the company has a long term contract with the building, it will probably be able to connect other buildings to this center.

Another typical plant is that of a large department store which, in addition, supplies steam for an adjoining office building and two restaurants.

Under the present method of operating, the heating company is more

in a position to negotiate for steam service than it would be if it had already installed a very expensive plant and distributing system, which imperatively demanded customers in order that it be maintained. It is natural that the customer would endeavor to secure his steam service as cheaply as possible, and, where the customer owns an independent plant already in operation, he is in a position to be somewhat independent in his negotiations.

INSULATION DIFFICULT IN CHICAGO'S SOIL.

The matter of running pipes underground has been quite a serious question in the operation of these plants. Apparently from the nature of Chicago soil some methods of installation which have given fairly satisfactory service in other cities deteriorate here very rapidly, and it has been found that in a very few years after the pipes have been installed there has been left nothing but the iron pipe and the concrete. The iron pipe also seems to be attacked more or less, either by acids or electrolysis, and in several cases it has been necessary to replace the pipe or to install a smaller pipe within the original pipe.

A year ago the company installed an 8-in. pipe line, 300 ft. in length, connecting the boilers in the old Edison Building on Market Street to the boilers in the new office building erected at Madison and Market Streets for the Chicago American and Chicago Examiner. Where the line crosses the street it was laid at an average depth of 9 ft. A tile sewer drain was first installed, in gravel, and over this was laid a bed of small rock and sand, to promote drainage. This was covered by a bed of reinforced concrete, in which were imbedded roller bearings for the piping. The pipe was incased in a wrapping consisting of two thicknesses of 1-16 in. sheet asbestos paper. This was painted with special tar paint. A dead air space of 1 in. intervenes between the asbestos covering and a paper felt conduit 1½ in. in thickness and lined on the interior with sheet tin. About this covering were two layers of tar felt paper completely covering the line. This covering also was painted with special tar paint. Outside of this covering was a casing of reinforced concrete 3 ins. in thickness.

The operation of the line thus far has been very successful. The steam service has been continuous without any interruption. No appreciable leaks have developed, and the loss through condensation in the transmission line has only amounted to 300 lbs. per hour. Inasmuch as the steam transmitted in cold weather is about 10,000 lbs. per hour we have a fairly satisfactory percentage of efficiency in transmission.

GROWTH OF COMPANY'S BUSINESS.

When the heating company was first organized many were inclined to regard the plan as more or less impracticable. Criticism was freely circulated against the little company, any many prophesied complete failure of the undertaking. In spite of opposition from engineers and others, the company has gone steadily forward; and while its growth has been slow, there has been a gradual increase from year to year. During the past three or four years there have been many gratifying proofs of the growing appreciation of this service on the part of the public, the business of the company being to-day nearly twice what it was three years ago.

The first contracts made by the company were of comparatively short duration, the longest being for five years. Some of the more recent contracts entered into during the past few years have covered a period of from ten to twenty years. This, of course, insures a more permanent basis of operations in making combinations between adjacent plants.

On referring to Fig. 1, showing the map of the loop district, it will be noted that the connected radiation amounts to less than 500,000 sq. ft. The steam service of the company, however, is considerably more extensive than this would indicate. More than thirty elevators, ice machinery,

pumps, hot water heaters, and other apparatus give a summer load requiring a coal consumption of upwards of 2,000 tons per month. In other words, nearly half the consumption of coal of the company is for other purposes than serving radiators. Expressing the steam demands on the company, therefore, in terms of radiation, we find that the steam requirements to be met are equivalent to over 800,000 sq. ft. of radiation.

The management feels that there is still room for a great deal of improvement, and also that there is still very much to learn. It is a question of considerable interest, as our large cities grow older and more compactly built up, as to what extent the theory of combination and co-operation will be applied to the production of heat, light and power in large buildings. As between the advocates of large central sources of supply and the advocates of entirely decentralized operation, it is possible that there may be some middle ground along the lines of which the greatest economy can be secured. It is in an effort to discover this middle ground that the above scheme of operation is being gradually extended.

A Paper Mill Heating System

AN INSTALLATION DESIGNED TO PREVENT CONDENSATION ON WALLS AND UNDERSIDE OF ROOF.

By W. E. Piper, C. E.

The accompanying plans of the machine room and finishing room of the Lake Superior Paper Co., Ltd., Sault Ste. Marie, Ont., illustrate the method adopted for heating the building and at the same time preventing condensation on the walls and underside of roof.

The plant is composed of two buildings.

The building illustrated herewith contains the machine room and finishing room, with a basement under each. A train shed at the end is not heated. The length of the heated portion is 396 ft. 4 in. and the width is 170 ft. 8 ins.

The problem to prevent condensation on the walls and underside of roof is in connection with the heating of the machine room. For this reason a large amount of air is blown horizontally from piping in the roof trusses. It will be noted that in the other rooms the direction of discharge is inclined toward the floor.

The temperature to be maintained in zero weather and the respective air charges are as follows:

Machine room, main floor, 70° F. 10 minute air change.

Machine room, basement, 60° F. 30 minute air change.

Finishing room, main floor, 70° F. 20 minute air change.

Finishing room, basement, 60° F. 30 minute air change.

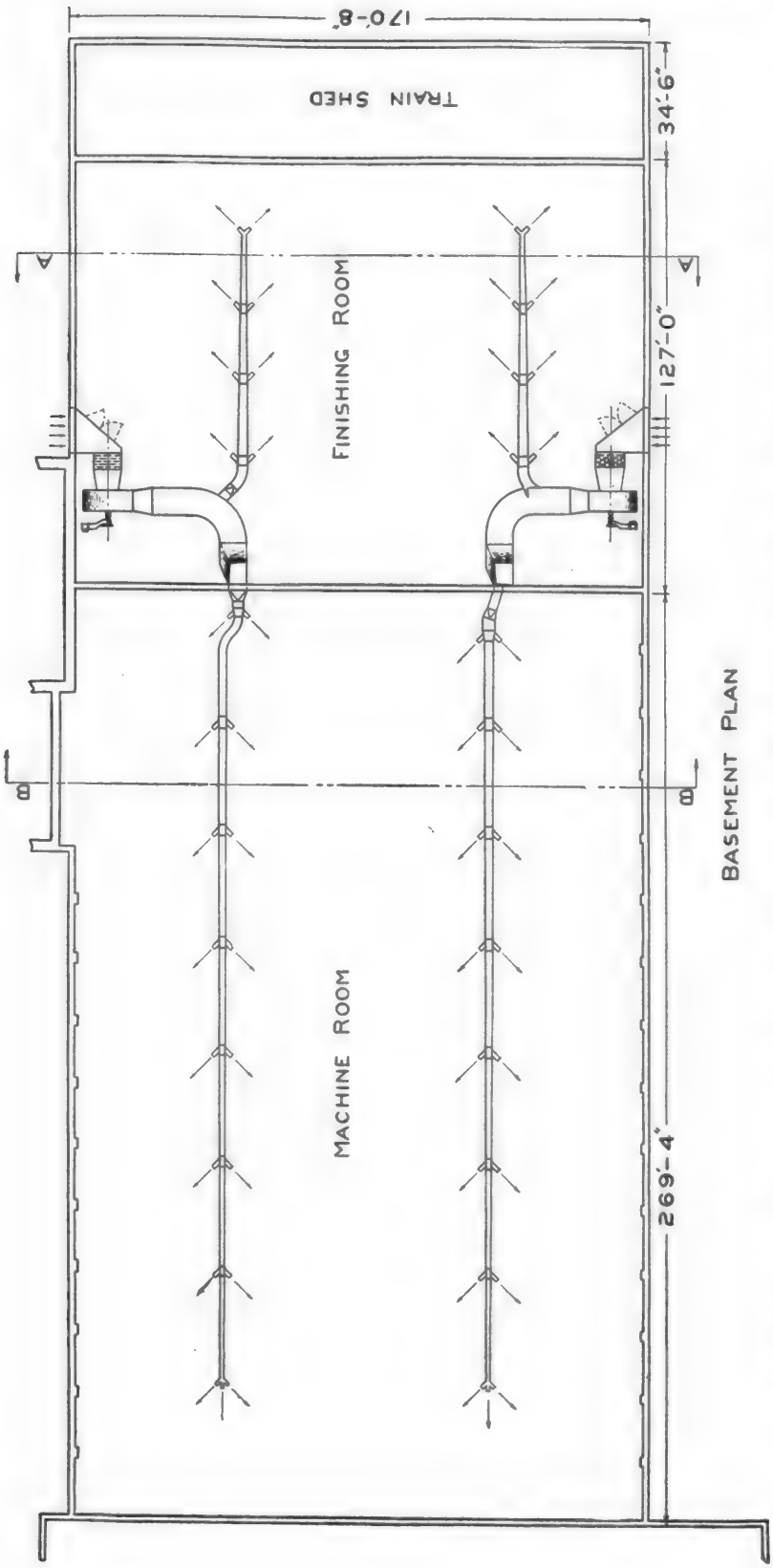
Two sets of apparatus are used, each as follows:

The heater consists of five 4-row sections, 9 ft. 4 in. wide, 11 ft. 10 in. high, 3 ft. 9 in. total length of heater, containing a total capacity of 10,125 ft. of 1-in. steam pipe. These are the regular ABC heater sections, 1-in. vertical pipe set in cast iron bases which have a longitudinal vertical partition separating the supply from the drip or return side. Whatever condensation collects on the supply side is drained to a "bleeder header" and trapped to the return line through a "bleeder loop" water seal.

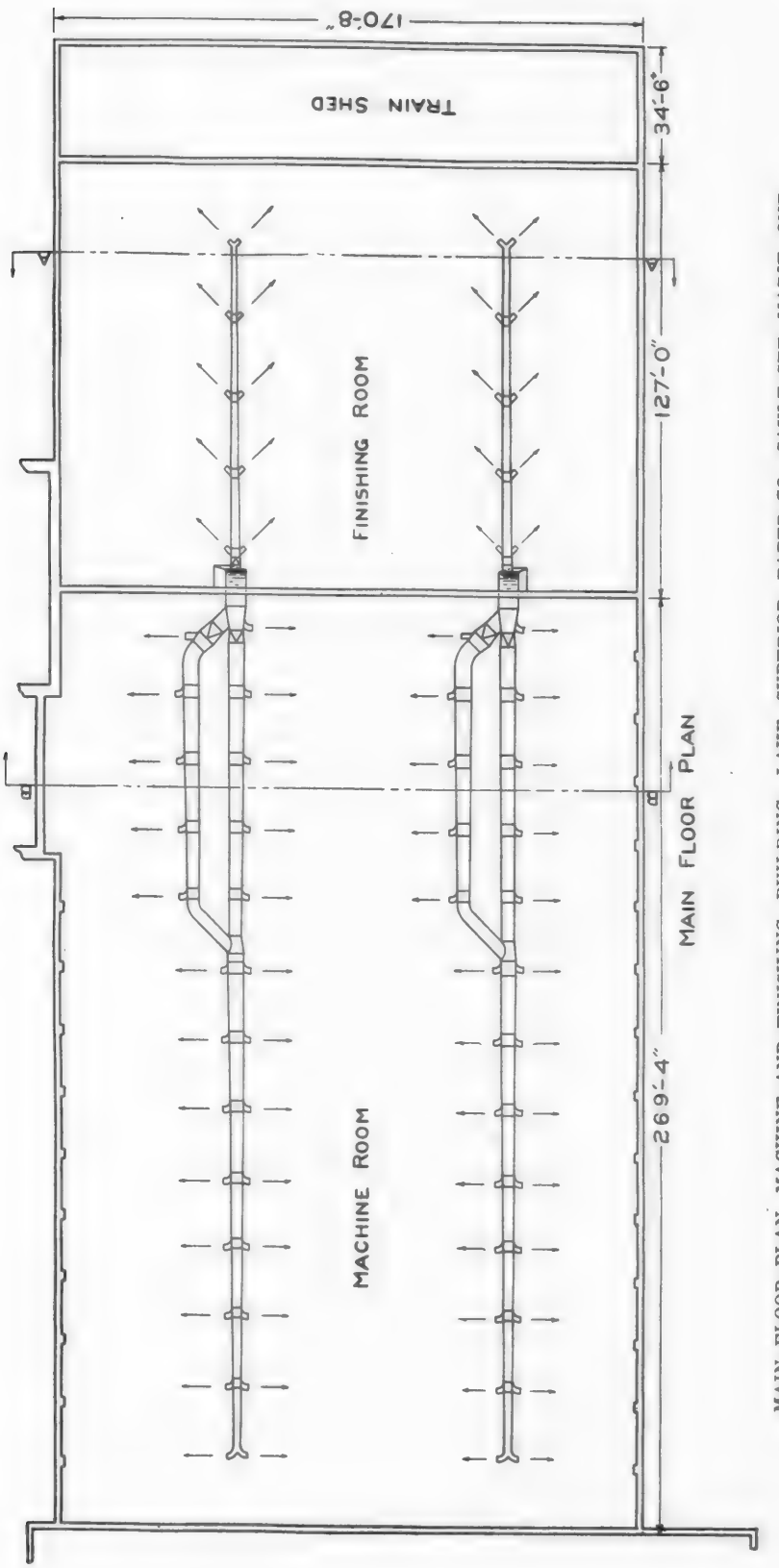
The fan is a special ABC steel plate blower with wheel 11 ft. diameter set three-quarter housed. The housing is 12 ft. 6 in. high above foundation, which is sunk 2 ft. 9 in. below the floor. The housing is 13 ft. 8 in. long and 6 ft. wide.

The fan capacity is 100,000 cu. ft. per minute at about 182 R. P. M.

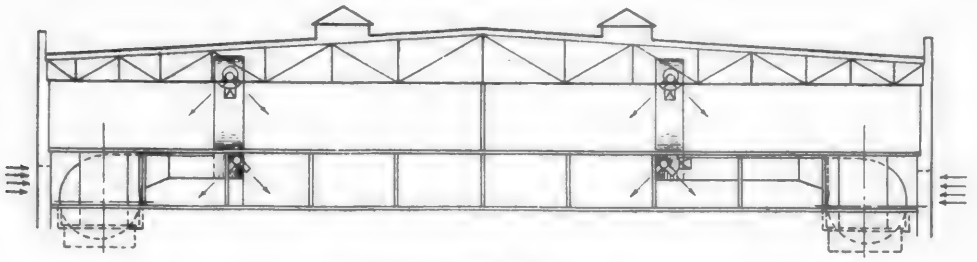
The engine is a horizontal side crank 12 in. by 16 in. Chandler and Taylor throttling governor engine,



BASEMENT PLAN, MACHINE AND FINISHING BUILDING, LAKE SUPERIOR PAPER CO., SAULT STE. MARIE, ONT.

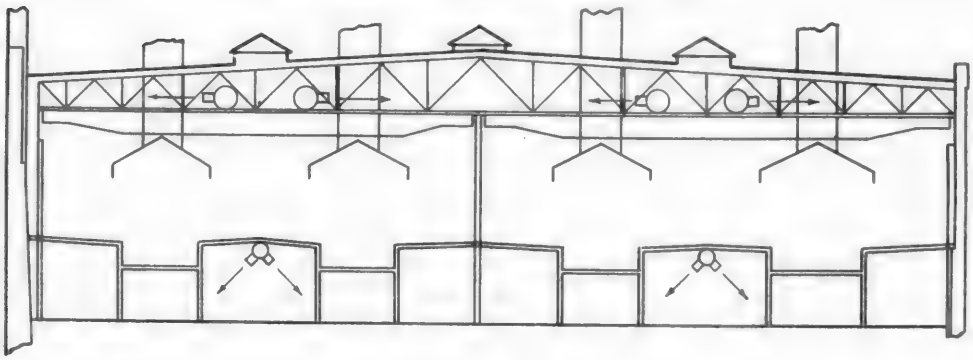


MAIN FLOOR PLAN, MACHINE AND FINISHING BUILDING, LAKE SUPERIOR PAPER CO., SAULT STE. MARIE, ONT.



SECTION AA

SECTION ON A-A, MAIN FLOOR PLAN.



SECTION BB

SECTION ON B-B, MAIN FLOOR PLAN.

direct coupled to fan. The air piping is shown in the cuts.

In the machine room the construction of roof trusses made it necessary to split the trunk line into two parallel lines each in a separate truss panel. This was considered less expensive than a single rectangular pipe which would have had to be fitted around the truss members. The cranes prevent any projection below the truss.

The heating and ventilating systems for both buildings are of American Blower Company make and the plant was built and installed under the supervision of George F. Hardy, New York.

Concrete Radiators.

A radiator for steam or hot water heating constructed of concrete is predicted as the next step in the development of this form of heating apparatus. Concrete radiators are at present being experimented with in Germany with apparent success.

"Combustion of Coal in Relation to Boiler Economy," By E. A. Uehling, president of the Uehling Instrument Co., Passaic, N. J., was one of the papers read at the recent meeting of the Ohio Society of Mechanical, Electrical and Steam Engineers, in Pittsburg, May 16-18.

AMERICAN SOCIETY OF HEATING AND VENTILATING ENGINEERS

Plans for the Mid-Summer Meeting in Detroit, July 11-12

Additional details of the mid-summer meeting of the American Society of Heating and Ventilating Engineers, at Detroit, Mich., July 11-12, include the following descriptive provisional titles of papers to be presented at that meeting:

Removal of Refuse and Waste by Fans and Blowers.

The Design of Brick Dryers.

The Design of Humidifying Apparatus.

Experiences with Residence Humidifying Apparatus.

Details of Heating and Ventilating a Mitten Factory.

Details of Ventilation of a Dispensary.

Tests of Heating and Ventilation, Northwestern University Buildings.

The Time Element in Starting Heating Apparatus.

Office Practice in Estimating Heating and Ventilation.

Observations on Temperature Equivalent of Outside Wind Velocities.

Experiments on the Ventilation of a School Room.

Hygiene Engineering in Relation to Ventilation.

The professional sessions will be held at

the Hotel Tuller, which will be the headquarters for the meeting. In addition to the activities of the Detroit members in providing for the entertainment and comfort of the society's members and guests on this occasion, the Illinois Chapter has appointed a special Committee on Meeting, which will have general charge of the reception in connection with the professional sessions. The Illinois Chapter has also appointed a Committtee on Transportation, which has planned to have as many of the Western members as possible travel in a body to the meeting, the trip being made from Chicago partly by boat.

There will be three professional sessions, opening at 10 A. M., Thursday morning, July 11, and occupying Thursday afternoon and Friday morning. While the Thursday afternoon session is in progress, it is proposed to entertain the ladies on a trip down the Detroit River to Bois Blanc Island. On Thursday evening there will be a concert at Belle Isle, sight-seeing automobiles being provided for carrying the members and guests to Detroit's notable island park.

On Friday afternoon, arrangements have been made to visit the plant of the American Blower Co., and also that of the Ford Motor Co., with supper at the Detroit Golf Club. An automobile ride in the afternoon is scheduled for the ladies.

On Saturday morning, a trip has been arranged to the plant of the Murphy Power Co., which conducts a central heating plant, and to the Detroit Edison Co., where may be seen the remarkable 2,356 H. P. steam boilers.

The committees are as follows:

Meeting—August Kehm, J. M. Stannard, C. F. Newport, Harry de Joannis, R. M. Stackhouse.

Entertainment—Ralph Collamore, Andrew Harvey, F. R. Still, W. F. McDonald, A. G. Pittelkow, A. W. Varney and R. C. Hargreaves.

Transportation, appointed by the Illinois Chapter—John D. Small, Geo. H. Kirk and H. W. Ellis.

The Hotel Tuller has quoted a flat rate for $2 a person, two or more persons in each room. In the case of one occupant per room, the rates range from $2 to $4.50 a day. All rooms have baths.

Secretary W. W. Macon has recently sent out the year book of the society, containing the list of members and the new constitution. The volume of Proceedings for 1910 is now being distributed and the volume for 1911 is in type.

Committee on Legislation for New York State.

The following committee on legislation for New York State has been appointed by First Vice President John F. Hale, who is acting president of the society in the absence in Turkey of President John T. Allen:

D. D. Kimball, chairman; Frank K. Chew, Frank T. Chapman, Walter S. Timmis and W. W. Macon.

Nelson S. Thompson, chief mechanical and electrical engineer in the office of the Supervising Architect of the Treasury Department at Washington, has been appointed to represent the society at the Fifteenth International Congress on Hygiene and Demography, at Washington, D. C., September 23-28, 1912.

New Members

The election of the following new members is announced:

MEMBERS.

Auguste Beaurrienne, Engineering Contractor, 89 Avenue Charles Floquet, Paris, France.

John F. Carney, Manager, National Regulator Co., 12 East 42d St., New York.

P. H. Fabricius, Fentzlaff Heating & Plumbing Co., 114 East 28th St., New York.

Chas. N. Flagg, Jr., Taylor-Flagg Co., Meriden, Conn.

W. A. Gates, Layton & Smith, Oklahoma City, Okla.

Charles W. Haensel, Engineer, Boynton Furnace Co., 106 West 37th St., New York.

W. J. Kline, American District Steam Co., N. Tonawanda, N. Y.

Frank S. Lamson, Engineer, J. H. Ashdown Hardware Co., P. O. Box 500, Moose Jaw, Sask.

William Lees, Heating Contractor, 548 Washington Boulevard, Chicago.

F. J. Lennox, New York Manager, Williamsport Radiator Co., 99 Beekman St., New York.

M. L. Longworth, W. P. Longworth & Co., 511 North 24th St., Richmond, Va.

Arthur McGonagle, Arthur McGonagle Co., Marbridge Building, New York.

William N. McKenna, William N. McKenna Co., 79 Chestnut St., Boston, Mass.

Herbert Muth, Muth Plumbing & Heating Co., Hutchison, Kan.

P. J. Newkumet, P. J. Newkumet Co., Firemen's Building, Newark, N. J.

R. W. Otto, Andrews Heating Co., 823 Holly Ave., St. Paul, Minn.

Ralph C. Taggart, Baldwin & Taggart, World Building, New York.

F. H. Valentine, Cleveland Electrical Illuminating Co., Cleveland, Ohio.

ASSOCIATES

Warren C. Bragg, 509 North Walnut St., Pittsburg, Kan.

Walter Cambridge, Berwyn, Ill.

Chas. F. Chase, Manager, New York Branch, W. S. Haines & Co., 39 Cortlandt St., New York.

Alonzo A. DuMond, Manager, Plumbers Trade Journal Publishing Co., 45 West 34th St., New York.

Walter G. W. Turno, Johns-Manville Co., Madison Ave. and 41st St., New York.

JUNIORS

Wells S. Dickinson, Boynton Furnace Co., 106 West 37th St., New York.

Herbert K. Lees, William Lees, 548 Washington Boulevard, Chicago.

J. E. Miller, 1026 Wesley Ave., Evanston, Ill.

A Cooling System for Rooms.

A device for cooling the air in rooms by means of ice has been invented by Carlton J. Stoddard, of Salt Lake City, Utah. The principle involved in the invention is the rise of warm air and the drop of cold air.

A cabinet of any size or shape is constructed which contains a receptacle for ice. A pipe brings the warm air from the outside, carries it up through the cabinet and returns it to the room from above. Application for a patent has been filed at the Patent Office.

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IT IS always a problem at conventions of trade associations, especially those at seashore or similar resorts, to hold the interest of the delegates sufficiently to secure their continued attendance at the business or professional sessions, as the case may be. Carefully made plans to prevent a clash between the business and entertainment programs have been followed with much success, but it still remains a fact that, with a large registered attendance, and possibly with important papers on the programme, the actual number of persons in the convention hall at any one time is usually far out of proportion to the total number at the convention. Even those who may have a distinct interest in the discussions will often pass up the meeting, due to calls elsewhere or perhaps to nothing more than an overheated convention hall.

A clever solution of this problem was adopted at the recent convention of the National District Heating Association at Detroit. The entire second day of the meeting was spent on board boat. The outing attracted practically the full convention attendance. Two professional sessions were scheduled and carried out on the upper deck of the boat, not in the cabin, but in the open. Save for an occasional boat's whistle there was nothing to disturb the speakers, while the comfort of all was in marked contrast to that possible in any confined quarters. The outlook on each side of the boat enabled those present to take in the discussions without losing the enjoyment of the trip itself, including the passing scenery. Finally, the attendance at each of the sessions was larger than at any other time, adding much to the value and fulness of the discussions. While the idea of a boat convention is not a new one, the successful manner in which it was carried out in this instance stamps it as one worthy of far wider adoption.

MORE than passing comment has been aroused by the large attendance that almost all of the 1912 trade conventions have enjoyed thus far. On one hand is heard the remark that slack business provides the necessary leisure to enable many to leave their immediate trade interests for a combined outing of business and pleasure. While this no doubt is true in many instances, the stubborn fact remains that the most persistent convention goers are the successful business men. Moreover, the general tenor of the remarks of convention delegates thus far is that a better trade outlook is distinctly visible and that even a presidential campaign cannot hold it back much longer.

IT IS seldom that the master steam fitters have had such important matters to engage their attention as were brought up at Atlantic City this year. The report of their convention, in this issue, is far more than the usual stereotyped account of convention doings.

National District Heating Association

FOURTH ANNUAL CONVENTION, DETROIT, MICH., JUNE 25-28, 1912.

How to make the central heating station pay may be said to be the engrossing theme that held the interest of those present at the fourth annual convention of the National District Heating Association, at Detroit, Mich., June 25-28, 1912. The subject gained added significance from the statement made in the address of President A. D. Spencer that, in a recent investigation of central heating plants, conducted by the National Electric Light Association Committee, out of 100 companies approximately only one-half considered the business profitable.

The convention met Tuesday morning, June 25, in the convention hall of the Cadillac Hotel, with President A. D. Spencer in the chair.

State Senator Lee welcomed the association to Detroit on behalf of Mayor Thompson. He was followed by Alexander Dow, vice-president and general manager of the Edison Illuminating Company, of Detroit.

The response to the addresses of welcome was made by Past President George W. Wright, of Baltimore.

President Spencer's address, which followed, was a timely discussion of central station heating, and was closely followed. It is given herewith, practically in full:

Possible Causes of Financial Loss in Operating Central Heating Plants.

The district heating business is nearly as old as the electric lighting business. As early as 1890 a number of electric lighting companies were selling exhaust steam for heating purposes. In most cases the area covered was limited to a few blocks. The business was supposed to be enormously profitable, and the number of companies selling exhaust steam increased rapidly from this time. In 1904 the National Electric Light Association Committee on Steam Heating estimated that there were at least 100 heating plants in operation. The report of this same committee shows that at this time the general opinion among heating companies was that the business was profitable, also that but few of the companies considered the heating service as of any value in securing electric business.

At the present time there are about 300 heating plants in the United States. The present National Electric Light Association Committee, which reported at the recent Seattle convention, gives answers from 100 companies. Of this number approximately one-half consider the business directly profitable, while practically all agree that the business is of great advantage in connection with the electric supply.

The value of a combination electric and heating system is being recognized more fully as the companies extend their field to include the large commercial establishments, formerly considered out of the reach of the central station.

The divided opinion as to the profitable or unprofitable nature of the heating business points to a condition that is very unsatisfactory and almost incredible. It undoubtedly would be impossible to find another business which is so well established and in which so many companies are engaged and so much capital invested, where one-half of the companies engaged believe that the business is unprofitable.

It is doubtful if a majority of heating companies have the necessary data to make up a reliable operating balance. As the heating plants are an outgrowth of the electric business and generally are operated in connection with the latter, expenses frequently are not separated. In some cases the heating revenue is not included with the earnings but is credited to the fuel account. Such revenue is frequently assumed to be practically all velvet, and cost analysis is considered unnecessary. Where an analysis is made, it frequently is inadequate, general expenses, fixed charges and depreciation being omitted. The answers furnished to the various National Electric Light and National District Heating Committees show that the majority of heating companies are unable to give definite and adequate costs.

INADEQUATE RATES AS A POSSIBLE CAUSE OF FAILURE TO SHOW PROFITS.

Failure to show profit may be due to inadequate rates. The tendency of many managers to consider heating revenue practically all net gain has caused them to establish rate schedules without due consideration of the value of the service to the consumer, or of its cost to the company. The popularity of the service, shown by the fact that in the usual case the efforts of the company are directed toward restricting growth

rather than toward securing additional service, shows conclusively its value. The value to the consumer is easily from 10 per cent. to 25 per cent. more than the cost to him of maintaining his own plant. This is due to the absence of smoke and dust, to the lower insurance rates obtainable, to the release of valuable space otherwise occupied by the plant, and to the greater convenience and reliability of the district heating service. The value of the service will generally permit rates based on the cost of supplying live steam, and rates should always be so based, rather than on the assumption that the steam is a by-product, an assumption which has not always proven correct.

FAULTY CONSTRUCTION OR IMPROPER OPERATION MAY BE CAUSE OF FINANCIAL LOSS.

Faulty construction or improper operation may account for a financial loss. As much care should be exercised in designing and constructing a heating system as is used in the construction of an electric supply system. In general, the distribution system should be designed to secure the maximum density of business with the minimum length of mains. Efforts should be directed toward increasing the load on existing mains, and extensions should be made only where it is certain a profitable amount of business can be obtained. Customers' installations should be subject to supervision; and, where flat rates are in use, rigid regulations should be enforced. Underground construction should be of first-class quality, both to reduce maintenance costs, and to minimize heat losses.

At the same time, it must be kept in mind that investment charges on expensive underground construction form a serious item in the cost of district heat supply, and construction costs must not be allowed to become so heavy that the charges more than offset the resulting operating economies. Where meters are used a thorough system of inspections and tests is necessary to prevent serious losses of revenue. Above all, an adequate system of records is essential for intelligent and economical operation.

LOCAL CONDITIONS A FACTOR.

Undoubtedly local conditions have much to do with the success or failure of a heating system; and undoubtedly plants are in operation in many places where local conditions do not warrant the investment. This is due to some extent to the idea that any heating revenue is net profit, and to some extent to considerations of policy, such as necessity for occupying the territory to prevent undesirable competition, and the desirability of being able to offer heating service in connection with electric service. Among the points to be considered in a study of local conditions are the following:

POINTS TO BE CONSIDERED IN A STUDY OF LOCAL CONDITIONS.

Location of steam plant.
Density of available business.
Probable growth of district.
Obstructions to underground construction.
Probable loss of electric plant capacity and efficiency due to back pressure.
Length and character of heating season.
Probable co-ordination of heating load and electric load.
Relative costs of steam coal and domestic coal.

Brief consideration of these points will show how one company may fail while another succeeds. The above points apply to exhaust heating. Where live steam heating is contemplated, still other considerations enter, and the chances of loss become much greater.

Plants operated principally for the advantage in obtaining electrical business may be operating at a loss, due to the carrying of business not directly desirable, such as restaurants, etc., which require summer service. Low rates may be intentionally established, in order to facilitate the taking over of private plants, with combined heating and electrical load. This does not seem warranted, except where the value of the service to the consumer will not permit higher rates and where the net result is an advantage to the entire electric business.

Undoubtedly the greatest causes of loss have been lack of information as to the experience of other companies and failure to appreciate the chances for loss and the conditions necessary for success.

This association is in a position to collect such information and to publish it for the benefit of companies now operating heating plants and companies considering such operation. This work, which will do much toward giving the heating business a sounder financial reputation, is the most important function of this association.

In connection with the question of quality of steam, it would seem desirable for the association to adopt a commercial standard for allowable moisture.

REPORT OF SECRETARY-TREASURER D. L. GASKILL.

In his report Secretary-Treasurer D. L. Gaskill stated that at the close of the year in 1911, the National District Heating Association had 145 active members and 20 associate members. During the year there has been added 48 active members and 22 associate members, and there has also been received during the year ten resignations from the active membership list and two resignations from the associate membership list, leaving the net membership stand on

June 22, 1912, as follows: Active 183, associate 40.

The receipts for the year were $1,807.36 and the expenses, $1,684.49, leaving a balance of $122.87.

The remainder of the session was taken up with the Report of the Meter Committee, which was presented by A. P. Biggs, chairman.

AFTERNOON SESSION, JUNE 25.

Papers read at the afternoon session were: "Common Sources of Trouble in Customers' Installations," by William E. Darrow, of Indianapolis; "Quality of Steam as Served by Central Station to Its Customers," by A. C. Shepherd, of Cleveland; Report of Committee on Central Station Records, presented by H. R. Wetherell, chairman.

THURSDAY SESSION, JUNE 26.

The novel feature of the convention, and one which gave unlimited pleasure to both members and guests, was the all-day trip on the steamer "Pleasure," with a professional session held en route. The boat was chartered by the entertainment committee for the exclusive use of the association. The trip was up the Detroit River past Belle Isle, and the government ship canal to the St. Clair Flats. A buffet luncheon was served on board, while an orchestra furnished delightful music throughout the trip. On the return the boat stopped at Belle Isle, where the party went on shore and had dinner at the Island Casino. Made under almost ideal weather conditions, the memory of the trip will long remain with those present.

During the session on board boat the following officers were elected for the ensuing year:

NEW OFFICERS.

President, R. D. De Wolf, Rochester Railway & Light Co., Rochester, N. Y.

First vice-president, J. F. Lewis, Murphy Power Co., Detroit, Mich.

Second vice-president, J. L. Hecht, Public Service Co., of Northern Illinois, Chicago.

Third vice-president, William E. Darrow, Merchants' Light & Heat Co., Indianapolis, Ind.

Secretary-treasurer, D. L. Gaskill, Greenville, O.

Members of executive committee, W. A. Wolls, Columbus Railway & Light Co., Columbus, O., and H. R. Wetherell, Peoria Gas & Electric Co., Peoria, Ill.

COMMITTEE TO CONFER WITH HEATING ENGINEERS.

On motion of H. W. Whitten it was voted to appoint a committee of the association to cooperate with committees of The American Society of Heating and Ventilating Engineers and of the National Electric Light Association, with a view of furthering the work of all three organizations.

Regarding the next meeting place of the association, a resolution was passed favoring Indianapolis, although final choice will be made by the executive committee.

Thursday's morning and afternoon sessions were given over to the reading of professional papers, the meeting concluding with a symposium on "Descriptions of Underground Insulation."

Entertainment Features Include All-Day Boat Trip.

Although a varied programme of entertainment was offered the members and guests attending the convention of the National District Heating Association, the one event that will stand out as the banner event of its kind in the history of the association, was the all-day boat trip to the St. Clair Flats and back, with two professional sessions held on board boat.

Not only the event itself but the attending features were arranged with an eye for detail that brought forth the heartiest expressions of approval and appreciation, and Secretary D. L. Gaskill was warmly congratulated for his part in the success of the undertaking.

Under practically cloudless skies the delegates and guests boarded the steamer "Pleasure" at 9 o'clock Wednesday morning to the number of some 150, the craft being especially chartered for the occasion. The weather was delightfully mild.

The route lay up the Detroit River past Belle Isle and thence through the Government Ship Canal to the St. Clair Flats. A professional session was held on the upper deck soon after the boat started and the members were thus enabled to view the scenery on each side while listening to the papers and discussions. An unlooked-for diversion occurred off Star Island when the large freight steamer Curry was run

down and sunk by the Bothnia within plain view of those on deck. The vessel sunk so quickly that by the time the convention party's boat passed the scene the vessel was nearly submerged and the water filled with wreckage. Although it was not known at the time, one deck hand on the Curry was drowned.

The Pleasure did not stop at the Flats, but when they were reached at about noon a buffet luncheon was served on the lower deck, followed by a professional session at 2 o'clock.

After the adjournment of the session the orchestra, which had been playing on the lower deck, occupied the platform of the improvised convention hall and then followed a vaudeville programme, in which the talent in the association as well as that of professionals was drawn on for songs, monologues, etc.

When this was over the chairs were moved back and the remainder of the afternoon was given over to dancing.

On the return trip the landing was made at Belle Isle, where the convention photograph was taken in front of the Horticultural Building.

The party then proceeded to the Belle Isle Casino, where a complimentary dinner to all present capped a very full day.

Later the public band concert near the Casino proved a magnet that attracted many, and here was witnessed Belle Isle's most characteristic sight, that of scores of luxuriously furnished canoes fairly packed in the lagoon near the bandstand and filled with young people enjoying the music. When the concert was over the party returned in groups to the city, some on the Belle Isle boats and others by 'bus across Belle Isle Bridge.

While the other entertainment features were thought of as coming before or after the boat trip, as the case might be, they were in themselves well worthy of notice.

During the afternoon of the first day of the convention the ladies were taken on an automobile ride on the East Grand Boulevard to Grosse Point and back through Belle Isle Park. Tea was served at the Detroit Boat Club on the island.

In the evening seats were reserved for the entire party at the Temple Theatre, where a vaudeville entertainment was on the boards.

On Thursday afternoon automobiles again took the ladies on an outing. The route was through Palmer Park and the residence section on the north side.

At the same time the members of the convention, immediately after adjournment, were taken in sight-seeing automobiles through Palmer Park and by the West Grand Boulevard to the Delray power houses of the Edison Illuminating Company, where an inspection was made of this mammoth plant. Particular interest was shown in the large 2365 H. P. boilers. Other inspection trips were arranged to the plants of the Murphy Heating Company and the Central Heating Company, as well as to other manufacturing plants.

For those who stayed over until Friday evening a moonlight boat ride on the steamer Pleasure was arranged by the Edison Company's contract department, with music and dancing.

The committee which so successfully carried out the entertainment features was composed of the following, all of Detroit:

ENTERTAINMENT COMMITTEE.

J. F. Lewis, Murphy Heating Company, chairman.
George D. Higgins, Murphy Heating Company.
J. V. Redfield, Central Station Steam Company.
W. R. Owen, Central Station Steam Company.
W. G. Bryant, Central Station Steam Company.
R. J. Kirchner, General Electric Company.
H. F. Van Valkenburg, American Radiator Company.
C. C. Owens, Westinghouse Electric & Manufacturing Company.
E. E. McNair, U. S. Radiator Corporation.
A. H. Ross, U. S. Radiator Corporation.
W. M. Moore, Buckeye Chemical Company.
C. J. Peck, The Crane Company.
J. M. Cotter, The Crane Company.
C. A. Poe, Wright Manufacturing Company.
R. W. Symes, Central Heating Company.
A. P. Biggs, Central Heating Company.

Among the Manufacturers.

Chamberlin Metal Weather Strip Co., Detroit, Mich., exhibited a life-sized model of double-sash window equipped with the Chamberlin metal weather strips. Those on hand for the company were J. P. Glaser, H. W. Whitten, of Boston; Harold McGeorge, C. W. Venners and John F. Hurley, of the home office. The company's circular matter included an interesting treatise on "Central Station Economy," by H. W. Whitten, in which the writer states, "for all practical purposes," one mile of wind movement per hour is equal to 1° F. drop in temperature through the range where artificial heat is required, whereas if window openings are equipped with Chamberlin metal weather strips, the wind is equal to only 0.4° drop.

Jenkins Bros., New York, showed various styles of its line of valves and steam and water packings. The exhibit was in charge of A. T. Arens, of the Chicago office.

Central Station Steam Co., Detroit, Mich., showed types of its Double Style A expansion joint and Detroit condensation meter. The company also distributed literature of its central station heating supplies. Its representatives present were J. V. Redfield, president and general manager; C. E. Hooks, W. R. Owen and W. G. Bryant.

American District Steam Co., North Tonawanda, N. Y., exhibited models of its extensive line of central station heating supplies, and atmospheric heating system devices. The company announced the extension of its field to include the design and examination of power, lighting, railways and water works. The company was represented by Charles R. Bishop, Byron T. Gifford, who has recently joined its staff; H. A. Austin, W. J. Kline and J. D. Walsh.

Richards-Wilson Pipe Covering Co., Grand Rapids, Mich., showed a full-size part installation of the Ric-Wil covering as applied to a 8-inch pipe line, with brick-encased bend. The exhibit included a sample of the infusional earth, the principal ingredient of the Ric-Wil covering. The company's interests were taken care of by J. H. Wilson, president, and Clarence M. Stokes, of the Norristown Magnesia and Asbestos Co., Norristown, Pa., eastern agents for the company.

Michigan Pipe Co., Bay City, Mich., showed models of the Michigan waterproof wood casings, with separate samples of the staves made of Michigan pine and of tamarack. Harry B. Smith, Jr., of the home office, was in charge.

A. Wyckoff & Son Co., Elmira, N. Y., had an exhibit of the Wyckoff improved steam pipe covering, featuring the use of cypress, "the wood eternal," in its construction. The company was represented by F. H. Horning.

H. W. Johns-Manville Co., New York, showed samples of the material used in the J. M. Portland sectional conduit, together with many circulars devoted to its various asbestos and magnesia products. C. H. Staten, H. O. Herrick and J. A. Cone were on hand in the company's interests.

American Foundry & Construction Co., Pittsburg, Pa., was represented by W. L. Klingelhofer and J. D. Hiles.

Babcock & Wilcox Co., New York, Fred A. Schepples.

American Radiator Co., Chicago; James E. Degan and C. McSorley.

Crane Co., Chicago; Charles J. Peck and E. J. Cotter.

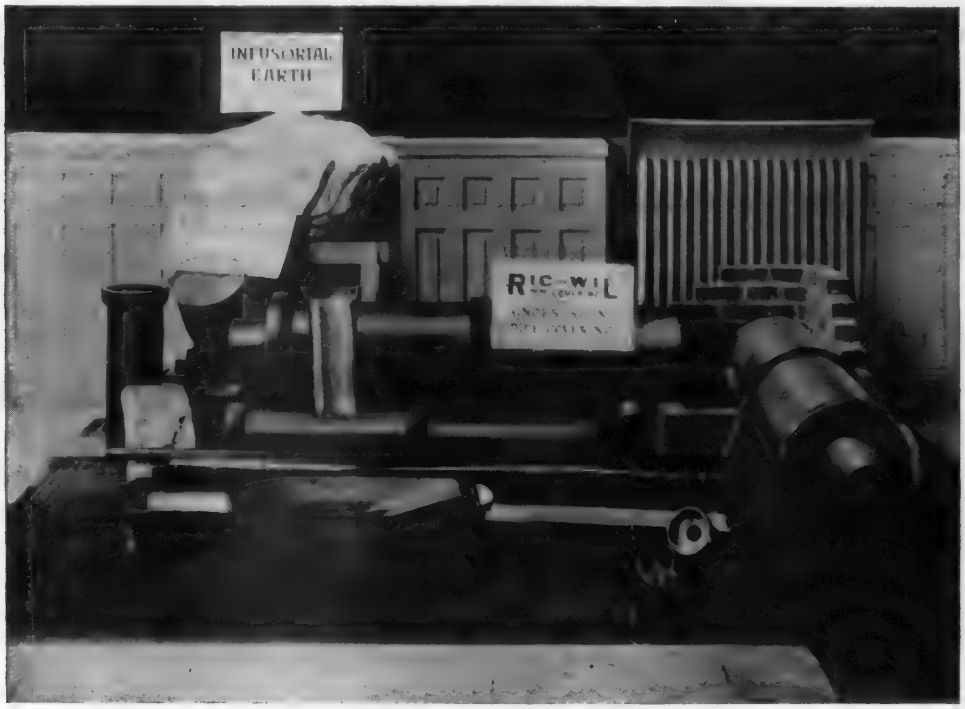
Armstrong Cork Co., Indianapolis; J. L. Patrick.

Standard Mfg. Co., Toledo, O.; Chas. Keplinger.

Builders' Iron Foundry, Providence, R. I.; W. D. Hess.

Westinghouse Electric and Manufacturing Co., Pittsburg; D. S. York, Detroit.

Tyler Underground Heating System, Pittsburg, Pa.; E. B. Tyler.



CORNER OF EXHIBIT HALL, SHOWING DISPLAY OF RIC-WIL UNDERGROUND PIPE COVERING.

CONVENTION PHOTOGRAPH, NATIONAL DISTRICT HEATING

In addition to those above mentioned, the following were registered:

A. D. Spencer, Central Heating Co., Detroit.
D. L. Gaskill, Greenville, O.
A. E. Betts, Kansas City Heating Co., Kansas City, Mo.
R. W. Symes, Central Heating Co., Detroit.
A. P. Biggs, Central Heating Co., Detroit.
A. B. Lincoln, Houston Coal Co., Detroit.
J. F. Lewis, Murphy Power Co., Detroit.
Alexander Dow, Edison Co., Detroit.
George D. Higgins, Murphy Power Co., Detroit.
H. A. Luke, Murphy Power Co., Detroit.
H. R. Wetherell, Peoria Gas & Electric Co., Peoria, Ill.
Joseph H. Meyer, V. D. Anderson Co., Detroit.
O. W. Irwin, Berlin Public Service Co., Berlin, Wis.
F. Murphy, Central Heating Co., Detroit.
A. C. Rogers, Toledo Rwys. & Light Co., Toledo, O.
David A. Gaskill, Greenville Electric Light and Power Co., Greenville, O.
W. S. Wolls, Columbus Rwy. & Light Co., Columbus, O.
F. L. Johnson, Columbus Rwy. & Light Co., Columbus, O.
J. C. Hobbs, Allegheny County Steam Co., Pittsburg, Pa.
F. F. Kellogg, Allegheny County Steam Co., Pittsburg, Pa.
S. C. Garner, Hazleton Steam Heating Co., Hazleton, Pa.
Oscar F. Rabbe, Toledo Rwys. & Light Co., Toledo, O.
A. H. Lamard, Michigan Power Co., Bay City, Mich.
George W. Wright, Terminal Freezing & Heating Co., Baltimore, Md.
H. B. Lau, Harrisburg Steam Heat & Power Co., Harrisburg, Pa.
L. A. Cramer, Harrisburg Steam Heat & Power Co., Harrisburg, Pa.
Edw. L. Wilder, Rochester Railway & Light Co., Rochester, N. Y.
Chas. A. Gilliham, Central Station Engineering Co., Chicago, Ill.
John T. Wurster, C. R. & I. C. Rwy. & Steam Co., Cedar Rapids, Ia.
L. D. West, Cleveland Electric Illuminating Co., Cleveland, O.
B. C. Shepherd, Cleveland Electric Illuminating Co., Cleveland, O.
G. E. Chasman, Public Service Co., of Northern Illinois, Oak Park, Ill.
Ralph C. March, Public Service Co., of Northern Illinois, Oak Park, Ill.
Fuller J. Getchell, Edison Electric Illuminating Co., of Boston.
R. J. Kirchner, General Electric Co., Detroit.
T. Wilson, *Power*, New York.
W. G. Bryant, Central Station Steam Co., Detroit.
C. A. Sichell, Central Heating Co., Detroit.
A. N. Richardson, Kansas City Heating Co., Kansas City, Mo.
C. H. Spiehler, Dayton Power & Light Co., Dayton, O.
A. S. Armagnac, *Heating and Ventilating Magazine*, New York.
W. L. Klingelhofer.
American Foundry and Construction Co., Pittsburg, Pa.
H. O. Pond, Westinghouse, Church, Kerr & Co., New York.
H. A. Ruth, Helena Costume Co., London, Can.
E. G. Jacques, Buckeye Chemical Co., Detroit.
W. M. Moore, Buckeye Chemical Co., Detroit.
W. K. Martin, Crawfordsville Heating Co., Crawfordsville, Ind.
James Trombley, Detroit.
John T. Ivers, Central Heating Co., Detroit.
Henry B. Kellogg, Central Heating Co., Detroit.
J. W. McNamara, Central Heating Co., Detroit.
M. O. Payne, The W. H. Schott Co., Chicago.
D. T. Wallace, The W. H. Schott Co., Chcago.
Thos. Donohue, Merchants' Electric Light Association, Indianapolis, Ind.
E. H. Negley, Canton Gas & Electric Co., Canton, O.
E. Darrow, Merchants' Heat & Light Co., Indianapolis, Ind.
L. S. Shaw, Westinghouse Machine Co., Indianapolis, Ind.
C. F. Oehlmann, Denver Gas & Electric Co., Denver, Col.
J. H. Walker, Edison Illuminating Co., Detroit.
L. H. Leeves, Chamber of Commerce, Indianapolis.
N. L. Martin, The Detroit Edison Co., Detroit.
H. A. Woodworth, Public Service Co., Evansville, Ind.
Ray T. Duncan, Central Heating Co., Detroit.
W. Parsons, Springfield Light, Heat & Power Co., Springfield, O.
H. S. Von Valkenburg, Detroit.
J. W. Devine, Miami University, Oxford, O.
William F. McDonald, Detroit.
Andrew Hansen, Missouri Heat, Light & Power Co., Kirksville, Mo.
W. J. Keep, Michigan Stove Co., Detroit.
C. W. Gail, Jones & Laughlin Steel Co., Detroit.
C. A. Poe, Wright Mfg. Co., Detroit.
S. Morgan Bushnell, Illinois Maintenance Co., Chicago.
A. E. Ingersoll, General Electric Co., Detroit.
Andrew H. Kreusi, General Electric Co., Detroit.
A. H. Ross, United States Radiator Corp., Detroit.
O. M. Flynn, Anchor Packing Co., Detroit.
O. H. Caldwell, Electric World, New York.

ASSOCIATION, DETROIT, MICH., JUNE 25-28, 1912.

William A. Newman, Central Heating Co., Detroit.
F. C. Leonard, General Electric Co., Detroit.
G. D. Bly, Monarch Supply Co., Toronto, Can.
F. B. Drees, Michigan Power Co., Lansing, Mich.
J. C. Hornung, The W. H. Schott Co., Chicago.
James E. Stott, Hamilton & Stott, St. Thomas, Ont.
Charles Abbe, Citizens' Heating & Lighting Co., Toledo, O.
Louis W. Greiner, Citizens' Lighting & Heating Co., Toledo, O.
A. L. Stowell, American Radiator Co., Cleveland, O.
A. M. Seeger, Toledo Railways & Light Co., Toledo, O.
Horace C. Allen, Toledo Railways & Light Co., Toledo, O.
G. W. Housdorfer, Toledo Railways & Light Co., Toledo, O.
S. C. Rogers, Toledo Railways & Light Co., Toledo, O.
C. E. Wright, *The Metal Worker*, Chicago.
Fred W. Smith, Shirley Radiator & Foundry Co., Indianapolis, Ind.
R. B. Flershem, American Radiator Co., Chicago.
Edwin D. Dreyfus, West Penn. Traction & Water Power Co., Pittsburg, Pa.
W. S. Culver, General Electric Co., Cincinnati, O.
H. J. Westover, American Gas & Electric Co., New York.
Thomas J. English, Muncie Electric Light Co., Muncie, Ind.
H. P. Sorensen, *Domestic Engineering*, Chicago.
W. H. Wells, American District Steam Co., North Tonawanda, N. Y.
Charles H. Bredine, Chamberlin Metal Weather Strip Co., Detroit.

Ventilation Inspector in Charge Appointed in Chicago.

As the result of an examination held by the Chicago Department of Health, Dr. E. V. Hill has received the appointment as ventilation inspector in charge for the Bureau of Ventilation of the Chicago Department of Health. The standing of the leading candidates as a result of the examination was: E. V. Hill, 74.86; John Howatt, 73.33, and G. D. Luce, Jr., 70.01. Only the three candidates named passed out of 30 applicants.

Dr. Hill has been a sanitary inspector in Chicago for five years, and was on the eligible list for supervising sanitary inspector. He was assigned to duty in his new position June 17. The eligible list for ventilation inspectors is not yet posted, owing to delay in marking the papers.

The Right Amount of Heat in the Right Place at the Right Time is a cleverly written booklet describing the atmospheric system of steam heating for offices, stores, public buildings, schools, churches, hotels and residences, published by the American District Steam Company, North Tonowanda, N. Y. This well-known system, whose characteristic feature of "the balanced air column" has given it such wide success, is discussed from a practical standpoint and the views include illustrations of the various parts that go to make up the system, and also a complete typical layout for a residence, with the various parts indicated by letter and title. One of the striking illustrations shows comparative coal piles with and without the atmospheric system, showing a saving, with this system, of 30 per cent. Size, 3½x6 inches. Pp. 16.

Tachometers and Tachographs for indicating and registering the R. P. M. of steam engines, etc., are the subject of a special bulletin that is being sent out by the Industrial Instrument Co., Foxboro, Mass. The devices shown are the Dr. Horn stationary tachometers and tachographs, for which this company is sole distributor in the United States. The line of these instruments covers a large variety of styles, ranges and purposes for practically all conditions of industrial and engineering service, and includes precision tachographs for recording minute variations in speeds of machinery. Size 8x11 (punched for binding). Pp. 24.

NATIONAL ASSOCIATION OF MASTER STEAM AND HOT WATER FITTERS

WHO HELPS ME I HELP

Twenty-Fourth Annual Convention at Atlantic City, N. J., June 10-13, 1912

President Edward B. Denny struck a live note at the convention of the National Association of Master Steam and Hot Water Fitters when he brought up the issue of sub-contracting in the course of his address at the opening session of the meeting.

This issue, coupled with the fight the association has on its hands in establishing the "1912 U. S. Standard" schedule of standard weight and extra heavy flanged fittings and flanges kept the interest in the proceedings at a high pitch. It was the largest gathering that has ever attended an Atlantic City convention of this organization, and it was the opinion of many that the meeting was the largest and most enthusiastic in the history of the master fitters' association.

No doubt the big turnout was due, in large measure, to the interest in the association's work aroused by President Denny in his extensive travels during the past year to various parts of the country. In his report he stated that he had spent no less than 70 days on his various trips visiting nearly all the important cities, including points along the Pacific Coast. An influx of 80 new members during the year were practically a direct result of his activities.

Enthusiastic expressions were heard on all sides of his services in the association's interests and when it came to the election of new officers President Denny's name was the only one to be considered. It was felt that he richly deserved his re-election.

Following preliminary committee meetings on June 10, the opening session of the convention was held at the St. Charles Hotel, Atlantic City, Tuesday morning, June 11. Mayor Bacharach of Atlantic City, was on hand to welcome the convention and referred in a jocular vein to the investigations of city officials then going on in Atlantic City. He urged the delegates not to judge the resort by the delinquencies of a few men and cited Atlantic City's boast that its Boardwalk may be visited by the ladies at any reasonable hour of the day or night without fear of molestation.

After responding to Mayor Bacharach's welcome, President Denny presented his address:

President Denny's report dealt exhaustively with the important matter of sub-contracting, in addition to a discussion of the efforts of the association in connection with the adoption of the "1912 U. S. Standard" Schedule of Standard Weight and Extra Heavy Flanged Fittings and Flanges. The portions of President Denny's address dealing with these topics is given herewith:

"1912 U. S. Standard"

Most particularly would I call your attention to the report of the committee on standardization, which will describe in detail our efforts to establish "The 1912 U. S. Standard" Schedule of Standard Weight and Extra Heavy Flanged Fittings and Flanges.

In view of the fact that some violent opposition to this schedule has been expressed by some of the manufacturers of such fittings, and that some misleading statements have been made relative to its adoption, it may not be amiss for me to state a few facts concerning the matter.

There has been no contention as to the desirability and need of a universal standard for flanged fittings and flanges; neither has there come to our notice any criticism of the schedule adopted as to its intrinsic merit; its adaptation to the requirements of the work for which such fittings are used. On the contrary, we have received many letters of commendation from

CONVENTION PHOTOGRAPH, NATIONAL ASSOCIATION OF MASTER STEAM AND HOT WATER FITTERS, ATLANTIC CITY, JUNE 10-13, 1912.

the very highest authorities for not only working out and adopting such a schedule, but for the evident care with which "The 1912 U. S. Standard" schedule has been prepared, reflecting, as it does, the theoretical demands of the engineer and the practical requirements of the practical steam fitter.

So far as we are informed, the opposition to the acceptance of the schedule is based either upon the method of its adoption or the expense entailed for the necessary alteration of some patterns. As to the latter objection, it is a self-evident proposition that no standard schedule could ever be made and come into general use without requiring such changes in patterns. While this may seem a hardship to the manufacturer, he has known for years that it was inevitable when those whose interests demanded the reform should be sufficiently aroused to insist upon having it, and had there been a reasonable response upon his part to the overtures made by us as long ago as 1905, this incidental expense would have been avoided to the extent of the cost of many new patterns made since that time. As to the method of the adoption of the schedule, if it shall be said (as it has been) that ample notice was not given to the manufacturers of our purpose to prepare and adopt such schedule, such a statement is not in accordance with the facts, as will be clearly shown by the reports of your secretary and the committee on standardization.

If the right and authority of those who made and adopted the schedule be questioned, we would ask what higher authority can there be on the subject than that of the American Society of Mechanical Engineers, whose members design most of the plants in which such fittings are used and are responsible for their proper dimensions and strength, and the National Association of Master Steam and Hot Water Fitters, whose members install such fittings and are likewise responsible for losses of life and property resulting from so-called standards fixed by those whose only interest consists in the profit that may be made on the sale of the goods, and who insist upon limiting the guarantee of their goods to the furnishing of a new part for that which may be found defective?

The subject is one that should receive your careful consideration, in the light of all the information contained in the reports of your officers and committees, and I recommend that the sentiment of our association, in convention assembled, be voiced with no uncertain sound.

It will be recalled that at our last convention a resolution was passed affirming the desirability of co-operation between our association and the National Association of Master Plumbers in such matters as were of mutual interest, and providing for the appointment by our board of directors of a committee to meet with a like committee of the board of directors of the National Association of Master Plumbers, to confer and take such action as might be found desirable. A similar resolution was adopted by the National Association of Master Plumbers in their convention at Galveston, Tex.

In pursuance of these resolutions, such conference committees were appointed, and their work will be reported to you in detail in executive session.

The Issue of Sub-Contracting.

One of the subjects taken up by the conference committee was that of subcontracting. This is no new subject to us. It has been considered in more than one of our annual conventions. We have adopted resolutions reprobating the practice; but in many sections of the country it not only continues, but is the greatest evil with which we have to contend. The subject seems to me of such vital importance as to warrant its discussion not only in all national and State conventions, but wherever and whenever it may be possible to strike a blow at it. That it may have wide publicity, I desire to quote from the report of a sub-committee on this subject, of which committee I was chairman:

1. The number of general contractors is seldom less than five and sometimes fifteen. Each general contractor gets estimates from not less than three plumbers and steamfitters—sometimes from a dozen or more. The actual cost to each plumber or steamfitter who estimates is not less than one-half of 1 per cent. of the amount of estimate.

If figured for owner, the number of bidders would average five. On a $2,000 contract, the cost to "the trade" would be $2,000 x ½ per cent. or $10 x 5 or $50. If figured under the general contractor, the number of bidders would average 39, making the cost to "the trade" $2,000 x ½ per cent. or $10 x 30, or $300. The average profit on a $2,000 contract would not exceed $250. When figured for owner, "the trade" makes $200 net, or 10 per cent. on the contract. When figured for general contractor, "the trade" actually loses $50.

Of course, the man who gets the contract makes $240, but it is at the expense of his fellow craftsmen, and "the trade" as a whole is poorer than if the work had not been done.

This is not an exaggerated statement. It describes a process that is in continuous operation, and if all the work done by the plumber and steamfitter were on the subcontract basis there would be no survivals after a few years.

2. Estimates given to general contractors are not, as a rule, fairly handled. No provision is, or can be, made for their being opened in the presence of bidders and the contract awarded in accordance with fair competitive rules. Usually they are opened as received by the general contractor or one of his employes, and the figures may be easily obtained by favored competitors.

If the general contractor gets the work it is seldom that he awards the sub-contract on the merits of the sub-estimates he has received. Either a favored party is offered the contract at the price of the lowest bidder, or else new bids are obtained, often from new bidders, and not infrequently the lowest final bidder is induced to take the contract at even a lower price by false representations as to the lowest prices of his competitors. There are very few general contractors in whose offices sub-bids are fairly handled.

3. The nature of our work is such as to justify and often necessitates our direct contact with the owner or his immediate representative, the architect. The general contractor is not concerned in such changes and betterments as are often made clear to the practical artisan as the work proceeds, and frequently an inferior installation is made because the general contractor cares only to comply with the specification.

4. Many general contractors are unable to properly finance the work they undertake and depend largely upon their credit to carry it through. In this "credit" they include the sub-contracting plumber and steamfitter. There is scarcely a member of our craft who has not experienced great loss through this condition of the general contractor's finances. Almost invariably in such work our payments are delayed long after the general contractor has received them. It is manifestly unfair that a third party should stand between us and the owner, with power to embarrass our business by withholding payments.

5. It is reasonable to conclude that the same work done through a general contractor will cost the owner more than if done directly for the owner. In some way the general contractor will get a profit. If it is made to seem that the building costs less by general contract the owner may be sure that he is getting less in quantity or quality. No plumber or steamfitter will do the same work cheaper for a general contractor (with all the risk and disadvantages) than he would do it for the owner.

Gentlemen, I believe that it is possible—that it is practicable—to kill this snake that for years has been winding itself about our business and squeezing out its legitimate profits. I am aware of the fact that some of our own members continue the practice; they claim that they know the contractors for whom they work; that they are the favored ones with such general contractors, and that they make a profitable business of it. Nevertheless, gentlemen, you are making such profit at the expense of your fellow members who, recognizing its inherent evil and having a just conception of loyalty to the resolutions of our own national body, absolutely refuse to compete with you for such work. Possibly you might lose some dollars by discontinuin the practice. So you might also *gain* some dollars by adopting some other disreputable practice which now you decry and abhor. Again, you might find that no real loss follows the abandonment of an unfair and unwise business practice.

All the work there is in our line has to be done, and it will be done, by those of us who are prepared to do it, whether we take it as sub-contractors or insist upon having our dealings direct with owners.

The most effective weapon we have against this evil is for all our members to be loyal to our own resolutions, even to the limit of whatever sacrifice it may require. I believe that an uncompromising stand taken by all our members would result in the elimination of our work from all general contracts. That this stand may be made easier for us, your board of directors has made some effective efforts to have such distinction made by those who prepare the specifications and contracts for much of the larger work. In nearly all departments of the United States Government a rule to that effect is now in operation. By a recent enactment of the New York State Legislature the same rule will apply to all work in that State designed and erected under State supervision. In many isolated localities local ordinances provide for such separation in the contracts for schools and other public buildings. Doubtless your incoming board of directors will continue their efforts in these directions, but, after all, the final victory will depend upon the determined stand to be taken by this association. Gentlemen, shall we not *cut out* this vile thing that is sucking the life blood out of our business?

CONFERENCES WITH OTHER ORGANIZATIONS.

A meeting of special interest and significance was held at our headquarters in New York on May 20 ultimo. It was composed of committees appointed by the American Institute of Architects, the National Association of Master Plumbers and the National Association of Master Steam and Hot Water Fitters. Its stated object was to confer on matters of importance to our business—the reform of abuses almost impossible for us to compass without the co-operation of the architects. It was a very satisfactory conference, the details of which will be fully reported to you in executive session.

My object in referring to this conference is to direct your attention to a new line of service that has been successfully inaugurated by your board of directors. If we can secure the active co-operation of the architects throughout the country it will be comparatively easy to bring about certain reforms that we have been vainly striving for for years. We have good reason to believe that this initial conference will result in such co-operation.

After several years of active work on committees, on the board of directors, and this last year as president, I am convinced that there is a great future for our association.

Our work for many years was practically bounded by the idea of trade protec-

tion, but there has been a gradually enlarging vision; a vision much larger than is contained in our motto, "Who Helps Me I Help." That is all right for keeping our friends, the manufacturers, off our lawn. I would not belittle that part of our work. It is important that with all our might we shall restrain the manufacturer from absorbing the business that makes it possible for us to live. But the broader vision comes with the knowledge that we have the power and opportunity to do things that help not only those who help us, but that may and do benefit the whole steamfitting fraterniy of our country. It is up to us, through our board of directors and our committees, to take hold of such matters as the standardization of the materials we use. the education of our members in methods of estimating and installing work, the vicious practice of subcontracting, and many other problems that need solution; to take hold of them with strong determination and prove our ability to solve them in the way that shall permanently benefit all steamfitters everywhere, whether their names are on our roll or not.

And then it will happen to us that, being found worthy to represent the fraternity at large, there will be continuous accessions to our ranks and we shall become more and more the National Association of Master Fitters.

To accomplish results in these larger things that are constantly challenging us means self-sacrificing work for many of our members. As incentive for such sacrifice, we have the example of many former members who have given time and means to laying the foundations of our association and building thereon the principles and methods that have resulted in the success already attained; but more than this is the incentive that comes with opportunity for larger and more effective service.

TO DO ALL WE CAN is the only limit to the obligation resting upon every member of our association.

The convention committees were appointed as follows:

Credentials: William P. Thompson, Pennsylvania; C. J. Fox, Wisconsin; Charles Geiger, New York; George H. Zellers, District of Columbia; C. S. Eames, Connecticut; J. A. Almirall, New York, *ex-officio*.

Appeals and Grievances: Edmund Grassler, Wisconsin; Henry W. Lloyd, Massachusetts; Harry Geiser, New Jersey.

Auditing: N. P. Bishop, Connecticut; William H. Curtin, New York; Walter A. Lawson, New Jersey.

Constitution and By-Laws: U. G. Scollay, New York; R. R. Albertson, New Jersey; C. B. Kennedy, Pennsylvania.

Distribution of Reports: Elias D. Smith, New York; George H. McClean, Massachusetts; Frank H. Meadows, Wisconsin.

Nominating: A. E. Kenrick, Massachusetts; George F. Kappel, New Jersey; J. E. Rutzler, New York; John J. Collins, Missouri; Joseph A. Langdon, Pennsylvania.

Reception: John T. Bradley, Missouri; W. B. Armstrong, New York; T. B. Cryer, New Jersey; J. T. Sadler, New York.

Resolutions: William P. Kirk, Connecticut; R. J. Haben, Pennsylvania.

Ways and Means and Good of the Order: S. A. Jellett, Pennsylvania; John J. Collins, Missouri; William H. Curtin, New York.

The convention then went into executive session when the reports of the other officers and committees were presented.

The Board of Directors report was read by William H. Oakes. Much interest centered in the report of the Committee on Trade Relations, read by N. P. Bishop.

SECRETARY'S REPORT.

Secretary Gombers reported that the membership of the association includes a larger number of active members than has been the case for some years past. The total number added to the roll during the year was 122, and the number dropped was 41.

The List in Accord had a gain of 25 concerns, together with the addresses of 7 branches, making a total of 32.

The report contained an exhaustive statement of the conferences leading up to the adoption of the "1912 U. S. Standard" Schedule of Flanged Fittings and Flanges, going to show that many of the manufacturers now opposing the standard had previously expressed themselves as agreeable to the general plan and had been given ample opportunity of presenting their case which, in some instances, they had failed to do.

STANDARDIZATION COMMITTEE'S REPORT

The report of the Committee on Standardization, which was presented

by William J. Baldwin, Jr., and was a comprehensive statement of the development of the "1912 U. S. Standard" flange schedule. Suggestions looking towards a solution of the problem of rating house heating boilers were also contained in the report which was, in part, as follows:

As we know there has been some recent active and not fair opposition on the part of some manufacturers to this uniform standard. Since "The 1912 U. S. Standard" was adopted some manufacturers have systematically tried to oppose its general use. So far as the committee knows no good reasons given except that it will cost something to change patterns. We know this is a fallacy for the simple reason that the purchaser pays whatever the manufacturer charges for fittings and they naturally include cost of altering patterns as well as every other item of cost when making prices.

Fortunately all manufacturers of fittings are not controlled by a few and quite a number have not only expressed their willingness to make fittings in accordance with "The 1912 U. S. Standard," but some we believe are now making and selling them. Our secretary has a list of manufacturers who are ready to accept orders for prompt delivery. While it is not within the province of this committee to recommend that our members give their business not only now but in the future to these manufacturers, we do think that they should have our support the same as they are now giving us support in this important undertaking.

When all the manufacturers of fittings are making and selling "The 1912 U. S. Standard," the names of those now making these fittings should be at the head of the list for the information of our members.

Because of the opposition of certain manufacturers, the committee will state briefly why and how "The 1912 U. S. Standard" was compiled and was adopted by the joint committee of the American Society of Mechanical Engineers and the National Association of Master Steam and Hot Water Fitters, and which has since been adopted by the Bureau of Standards of the United States Navy Department, several of the other Federal departments, some State and municipal departments, engineering societies and others, a list of which our secretary has for the information of our members.

HOW THE "U. S. STANDARD" CAME TO BE ADOPTED.

The history of standard flanged fittings prior to the time the joint committee took the matter in hand is brief. As a matter of fact there was no uniform standard. This association for years has been endeavoring to get a uniform standard, and our records show that with this end in view we communicated with the manufacturers at least five or six years ago, but without results. When the joint committee started its work on "The 1912 U. S. Standard," over a year and a half ago, the manufacturers were invited to join with us, but practically declined to do so as an association. Some individual representatives attended a few of our meetings and assisted us in the work. The attitude of the manufacturers as a whole, prior to the time the joint committee started its work and during the time the committee was at work on "The 1912 U. S. Standard," and subsequent to its adoption, has been one of delay and unfriendliness, which has added greatly to the work of the individual members of the joint committees. The desire of the joint committee was to work with the manufacturers if possible, but when they refused there was nothing for us to do but continue our work without their assistance.

WHY THE STANDARD IS NECESSARY.

Some of the reasons why "The 1912 U. S. Standard" was necessary are: First, the question of safety was first considered, and it was pointed out by Mr. Stott, chairman of the committee on flanges of the American Society of Mechanical Engineers, that the factor of safety due to the stress in bolts was less than 2, compared with the factor of safety of about 16 for extra heavy pipe. In other words, where the bursting pressure of extra heavy pipe was approximately 4,000 lbs., and the maximum steam pressure carried 250 lbs., there is a factor of safety of about 16; while in the case of fittings the stress due to the applied load figured on the basis of actual experiments showed that the initial load due to screwing up a bolt to make a steam-tight joint may be estimated at 16,000 lbs. per inch nominal diameter of bolt, or 29,000 lbs. at base of the thread for a 1-in. bolt. This intensity of stress varies approximately inversely as the nominal diameter of bolt, so that with bolt steel at 60,000 lbs. tensile strength we have a factor of safety of less than 2 for bolts smaller than 1 in. and a little above 2 for bolts larger than 1 in.

Owing to the ununiformity of different makes of flanged fitttings on the market, and this low factor of safety, many large users of high pressure fittings like the Interborough Rapid Transit Co., New York Edison Co., the United States Navy Department, and others, have in the past had special fittings made from their own patterns rather than take chances on ununiform fittings. Now that we have "The 1912 U. S. Standard," the Interborough Rapid Transit Co., the New York Edison Co. and United States Navy Department have discontinued the use of their special fittings and have adopted "The 1912 U. S. Standard." Other large users of special fittings will undoubtedly do likewise.

In view of the above, no fair minded person can honestly question the advisability of making flanged fittings safe when

it is only a question of increasing the diameter of the flange, or increasing the number or size of bolts, and adding a little additional weight to the fitting, the cost of which is relatively small compared with the total cost of the fitting; and the purchaser pays for it in any event.

When fittings let go and damage is done, the contractor or owner usually suffers the consequences, and if they are willing to pay the increased cost of fittings for the question of safety alone, the manufacturers have no just grounds for complaint.

The second important reason for "The 1912 U. S. Standard" is that of having all fittings of a size of different manufacturers uniform in all essential measurements and details. The necessity for this is so apparent to everyone, whether contractor or engineer, that there is scarcely any room for argument against it. It is annoying and inconvenient to the designing engineer when he does not know the dimensions of fittings which will be used in some piping work where space is an important item, and where detailed drawings must be made accurately to scale. When there was no standard the engineer had to specify one particular make of fittings to the exclusion of others when his drawings had to be very accurate. "The 1912 U. S. Standard" will save the designing engineers and draughtsmen a great deal of time, worry and expense to which they have heretofore been put.

When it comes time for the contractor to erect piping work it will not be necessary for him to spend a lot of time checking drawings to see if fittings of this, that or the other make will fit in. The pipe lengths can be cut and delivered and the fittings delivered separately, and when the fitters erect them much of the unnecessary expense for labor and annoyance experienced in the past will be eliminated.

When the contractor is called in to make repairs or alterations, especially where it is necessary to get a plant operating as quickly as possible after breakdown, the saving to the owner not only in the cost of making the repairs, but in not having his plant shut down unnecessarily long, are only a few of the benefits derived by using "The 1912 U. S. Standard."

These are the two most important reasons for the standard, viz., safety and uniformity.

We will state briefly how "The 1912 U. S. Standard" was developed.

DEVELOPMENT OF THE STANDARD.

The committee appointed one of its members to tabulate the different size fittings of six or eight different large manufacturers, and after this was done the tabulation was presented to the members of the committee in blue print form for their individual study. Each manufacturer was represented by a number so that no member of the committee, except the one who knew the key, could tell which manufacturer's fittings we were considering. Our first effort was to see if two or more manufacturers agreed on any particular size fittings in all dimensions, and in this way possibly avoid changing dimensions of fittings where several of the manufacturers agreed. We found, however, when considering the fittings from the standpoint of safety, that it was necessary to make changes which originally we hoped might be avoided. In some cases we found that additional bolts were necessary, and in other cases that it was necessary to increase the diameter of the bolts. This frequently necessitated increasing the size of the flange and sometimes increasing the length of the branch of the fittings so that the flanges would clear. This refers particularly to the tees and Y branches. In other cases we found the bolts could not be gotten in conveniently, and this required changes in the diameter of the bolt circles, etc. Every minute detail of every fitting was carefully considered and reconsidered from every viewpoint. Records of tests were examined and full sized detail drawings were made, showing all dimensions, drillings, bolts, etc. The amount of work which this required is almost inconceivable by anyone except those who know the amount of time that had to be given to it.

We have been able to materially increase the factor of safety without making unnecessary changes.

During the time the joint committee was working on the standard, we had the advice and assistance of Capt. Charles M. Dyson, of the United States Navy Department, and at several of our conferences individual manufacturers were represented, and whenever they made suggestions they were carefully considered, and we believe in every case these suggestions were carried out.

We did not have the support of the manufacturers as a whole in our effort to compile this standard, but we had the help of some, and we hope every member of this association and every engineer or person interested in the subject will now give their active support to its adoption and use throughout the country.

The committee would suggest that one means of procuring recognition of "The 1912 U. S. Standard" would be for every member when placing an order which requires either flanges or flanged fittings to have printed or stamped on the order that all flanges and flanged fittings must be in accordance with "The 1912 U. S. Standard," and this would apply to pumps, engines, heaters or any other apparatus which will be erected with flanged piping, fittings or valves.

If any manufacturer refuses to accept an order calling for "The 1912 U. S. Standard," the member should immediately report same to our secretary at National headquarters, giving any reasons if stated by the manufacturer. The secretary will undoubtedly be able to give the member

names of manufacturers who will comply with "The 1912 U. S. Standard."

AT WORK ON LARGER SIZES.

This committee has been instructed by the board of directors to take up the question of standardizing very large size flanges, and at present we are at work on this, with the co-operation of the committee of the American Society of Mechanical Engineers. We hope in the near future to present for adoption a schedule of same. This new schedule will apply to very large size flanges and will not in any way affect "The 1912 U. S. Standard."

Mr. Gombers will undoubtedly have a lot of valuable data, information and suggestions to make with reference to "The 1912 U. S. Standard."

House Heating Boiler Rating.

The individual members of this committee have been working systematically on the question of rating house heating boilers, and though we are now only reporting progress we are not giving up this important matter. While we have not been able to get the boiler manufacturers as a whole to agree on a standard for testing and rating house heating boilers, we believe in some cases they have come to the conclusion that their catalogue ratings are, to say the least, excessive for house heating conditions. If members want to satisfy themselves on this point, all that is necessary is to ask a boiler manufacturer if he will guarantee the ratings shown in his catalogue provided the boiler is operated under house heating conditions as now generally accepted, and you will probably find that he will advise you not to expect the boiler to carry the catalogue's rating unless you fire oftener than once in eight hours in severe weather. The committee believes that while house heating conditions vary some, they are fairly accurately defined, and we have offered the following as conditions under which house heating boilers should be operated, and the boiler under these conditions should be executed to carry the ratings which the boiler manufacturers claim for them:

First—That the boiler should be fired only once in eight hours.

Second—That it should not be necessary to burn more than four pounds of anthracite coal per hour per square foot of grate (coal containing at least 12,000 B. T. U., per pound).

Third—That in figuring the amount of direct radiating surface which a boiler should take care of, each square foot of direct steam radiating surface will emit 250 B. T. U. per hour, and each square foot of direct hot water radiating surface will emit 190 B. T. U. per hour.

The committee believes that if this standard was universally adopted it would be equally fair to all manufacturers. What we ask of a manufacturer is that his boiler will, under house heating conditions as definitely defined, take care of the amount of surface which his catalogue claims.

At one time it was thought advisable by the committee to limit the temperature of the gases leaving the boiler, but this was commented on by some manufacturers, who claimed a higher efficiency for their boiler when the gases passed off at higher temperatures. The committee felt it was necessary in some way to either fix approximately the temperature at which the gases should leave the boiler or to stipulate the efficiency of the boiler when operating under house heating conditions. It was finally concluded to eliminate everything that might leave any chance for reasonable objection, so that now there are only three points, and they are definitely fixed—first, the number of hours between firing; second, the amount of anthracite coal burned per square foot of grate per hour; and third, the amount of heat that will be emitted from a square foot of direct radiating surface as the basis for fixing the boiler rating.

The committee recommends that when members are purchasing heating boiler for house heating purposes, and wish to protect themselves against the possibility of installing too small a boiler, or a boiler which might be overrated, that they stipulate, when ordering, the conditions as outlined in the three clauses before read, and ask the manufacturers to guarantee their ratings when the boilers are operated under these conditions, namely: fire once in eight hours; burn four pounds of anthracite coal per hour per square foot of grate; and the direct steam radiators emitting 250 B. T. U. per hour per square foot, and hot water radiators emitting 190 B. T. U. per hour per square foot of surface.

The committee offers the above as a suggestion, and it has occurred to us that a rubber stamp could be made, the contents of which would briefly define house heating conditions, and if boiler orders were stamped with same, the effect would be beneficial.

If a member has a house to heat to 70° F. in zero weather requiring 1,000 sq. ft. of direct steam radiation and 300 sq. ft. additional direct surface in exposed mains and risers, he should be able to turn to the boiler manufacturer's catalogue and pick out a 1,300 ft. boiler. This could be done if the boiler manufacturers would rate their boilers conservatively in accordance with house heating conditions as we have outlined, and not rate them from tests made as power boilers are tested and run.

RADIATOR VALVES TO BE STANDARDIZED.

Some of the new work which the committee has in hand at present is that of standardizing radiator valves. Now we can only report progress. The committee would like suggestions from the members on the matter of standardization work.

The report was signed by Wm. J. Baldwin, chairman; T. B. Cryer, N. L. Danforth, W. T. English, W. P. Kirk, Edward B. Denny, and W. H. Oakes.

TREASURER'S REPORT.

The report of Treasurer Juan A. Almirall showed:

Cash on hand May 1, 1911.....	$8,065.36
Receipts, May 1, 1911, to May 1, 1912	16,287.36
Making a total of.....	$24,352.72
Expended, May 1, 1911, to May 1, 1912	15,311.53
Cash balance May 1, 1912....	$9,041.19

NEW OFFICERS.

The election of officers was unanimous, the following ticket being named:

President: Edward B. Denny, Newark, N. J.

Vice-president: John T. Bradley, St. Louis, Mo.

Treasurer: Juan A. Almirall, New York.

Sergeant-at-Arms: John C. F. Trachsel, Philadelphia.

Board of Directors: William H. Oakes, Boston; Juan A. Almirall, New York; John T. Bradley, St. Louis, Mo.; Edward B. Denny, Newark, N. J.; Charles A. Geoghegan, New York; E. Grassler, Milwaukee, Wis.; Peter F. Maginn, Pittsburg, Pa., and Samuel Wright, Buffalo, N. Y.

At a subsequent meeting of the Board of Directors Henry B. Gombers was re-elected secretary.

The usual pleasantries attending the installation of the newly-elected officers were carried out with Stewart A. Jellett, of Philadelphia, acting as Chairman and Elias D. Smith, of Elizabeth, and P. Gormly, of Philadelphia, acting as a committee to quiz the new incumbents and administer the oaths.

The convention closed with a pleasant surprise for President Edward B. Denny in the shape of a silver-headed ebony cane, presented by T. B. Cryer on behalf of the members of the New Jersey State Association of Master Steam and Hot Water Fitters. The cane, said Mr. Cryer, was a slight token of the esteem in which President Denny is held by his fellow-members from New Jersey. President Denny showed his surprise as well as his deep appreciation of the gift, but quickly found words to express the thanks he felt for the graceful action of his New Jersey friends.

Before adjournment was taken greetings were exchanged by telegraph with the National Association of Sheet Metal Contractors, then assembled in convention in St. Louis.

Entertainment Features.

The large attendance at the convention, especially on the part of the ladies, gave added zest to the entertainment features, which were admirably carried out under the direction of W. G. Le Compte, president of the Manufacturers' and Supplymen's Entertainment Committee, ably assisted by J. Barton Garfield, who served as secretary-treasurer pro tem. At a preliminary organization meeting the following committees were named:

Captain of the rifle team: for the supply men, W. G. Le Compte; for the master fitters, W. J. Baldwin, Jr.

Captain of the bowling team: for the supply men, E. C. Molby.

In charge of the bowling alleys, C. A. Miller.

In charge of the ladies' bowling alleys, J. Barton Garfield.

In charge of the rolling chairs, R. B. Hunt.

Committee on convention supper, W. M. Cosgrove and H. G. Issertell.

W. G. Le Compte was unanimously re-elected to serve as president of the Manufacturers' and Salesmen's Entertainment Committee for another year, as were Frank K. Chew, as secretary, and M. E. Danforth, treasurer.

The following firms subscribed to the entertainment fund, which was used to defray all of the expenses connected with the entertainment programme.

Contributors to Entertainment Fund.

Spencer Heater Co., Scranton, Pa.
Richardson & Boynton Co., New York.
Jenkins Bros., New York.
Novelty Iron Works, Canton, O.
Direct Separator Co., Syracuse, N. Y.
Atwood & Morrell, New York.
McCrum-Howell Co., New York.
Shirley Radiator & Boiler Co., Indianapolis, Ind.
W. H. Page Boiler Co., Norwich, Conn.
Johnson Service Co., New York.
Massachusetts Fan Co., Watertown, Mass.
Dexter Engineering Co., Providence, R. I.
Handy Mfg. Co., Bridgeport, Conn.
United States Radiator Corporation, Detroit, Mich.
Kewanee Boiler Co., Chicago, Ill.
Warren Webster & Co., Camden, N. J.
American Blower Co., Detroit, Mich.
Keasbey & Mattison Co., New York.
Standard Steam Specialty Co., New York.
The H. B. Smith Co., Westfield, Mass.
H. W. Johns-Manville Co., New York.
Crane Co., Chicago, Ill.
Patterson-Allen Engineering Co., New York.
Pierce, Butler & Pierce Mfg. Co., Syracuse.
American Radiator Co., Chicago, Ill.
Kennedy Valve Co., Elmira, N. Y.

Manning, Maxwell & Moore, New York.
James A. Donnelly, New York.
Cryer Return Line System Co., New York.
Fowler & Wolfe Mfg. Co., Philadelphia, Pa.
National Radiator Co., Johnstown, Pa.

Golf Tournament.

The special golf tournament arranged in connection with the convention at the Atlantic City Country Club, and played on Monday, June 10, resulted as follows:

18-hole medal play, handicap: Winners, E. C. Eckfeldt, 111-36, 75, prize, box of golf balls; F. F. Cooper, 106-30, 76, prize, scarf pin; C. S. Wood, 108-30, 78, prize, golf shoes; F. C. McLain, 95-14, 81, prize, scarf pin; R. B. Hunt, 99-18, 81, prize, golf bag. Other scores were: J. M. Kipe, 93-11, 82; E. H. Giles, 107-25, 82; J. B. Garfield, 83-0,83; E. C. Molby, 97-12, 85; W. G. Gilbert, 101-16, 85; A. S. Armagnac, 98-12, 86; J. C. Parry, 96-7, 89; G. H. Chasmar, 97-6, 91; W. C. Matlack, 119-25, 94; C. R. Fowler, 113-18, 95; A. H. Pearson, 130-30, 100; J. C. Faulkner, 150-36, 114; J. A. Donnelly, 152-36, 116; E. B. Denny, Jr., 156-36, 120; G. C. Schmidt, 181-36, 145.

A competition against bogey, which was played at the same time, was won by J. B. Garfield, who, with a medal score of 83, finished all even with bogey.

In the afternoon the event was a best ball match, with the players paired. This event was won by A. S. Armagnac and F. C. McLain with a score of 83-9, 74.

Master Fitters Win Rifle Match.

The convention rifle match was won by the team representing the Master Fitters' Association, the individual and the total scores being:

MASTER FITTERS' TEAM.				
W. J. Baldwin, Jr., Captain	184	188	186	187
Henry B. Gombers	180	191	192	193
J. A. Almirall	188	187	183	185
P. F. Maginn	186	181	185	186
W. C. Miall	181	185	183	182
	919	932	929	933
SUPPLY MEN'S TEAM.				
W. G. Le Compte, Captain	189	193	187	187
G. H. Chasmar	185	166	174	163
H. S. Ashmun	184	179	186	184
R. B. Hunt	176	184	179	166
David Boies	175	184	182	182
	909	906	908	882

The Bowling Tournament.

While rival teams of the master fitters and supply men were fighting it out on one set of alleys on Wednesday night, twenty-four of the ladies competed for individual honors on other alleys, with the following results, the names in the ladies' tournament being given in the order of their finish:

SUPPLY MEN'S TEAM.			
W. G. McCormick	120	178	211
W. M. Cosgrove	176	176	154
C. S. Wood	140	131	171
Arthur Ritter	142	145	158
E. C. Molby	154	157	209
	732	787	903

STEAM FITTERS' TEAM.			
H. W. Chapman	180	167	156
Wm. Gordon	126	...	...
G. H. Zellers	..	147	139
Henry B. Gombers	132	125	144
E. F. Joy	123	120	116
Wm. J. Baldwin, Jr.	127	146	182
	688	705	737

LADIES BOWLING TOURNAMENT.

Mrs. E. C. Molby, 222; Mrs. J. Parry, 216; Miss Theodora Jellett, 171; Mrs. A. S. Armagnac, 170; Mrs. William Curtin, 167; Miss E. Rutzler, 156; Mrs. L. Moore, 154; Miss J. Collins, 153; Mrs. H. Addams, 151; Miss A. Rice, 139; Mrs. M. J. Callahan, 44; Mrs. J. T. Bradley, 134; Mrs. W. J. Olvaney, 125; Mrs. Charles Geiger, 121; Mrs. E. Rutzler, 120; Mrs. C. A. Geoghegan, 118; Mrs. H. M. Chapman, 114; Mrs. W. P. Kirk, 105; Mrs. N. P. Bishop, 100; Miss Curtin, 95; Mrs. E. T. Child, 82; Mrs. L. H. Quackenboss, 80; Miss L. Scott, 79; Miss K. Wright, 78.

The Supper at the Isleworth.

All the features of a midnight supper in a large city were attended the collation served at the Isleworth immediately following the bowling contests. Here the prizes for the various convention events were arranged on a table in the center of the hall, while the diners sat at tables extending around the four sides of the room.

In the first place there was the strike of waiters, cleverly engineered by Chairman W. G. Le Compte and H. G. Issertell, whose white flannels gained him lasting renown as Phoebe Snow of the Road of Anthracite. After enough volunteer waiters, including one fair lady, had been drafted from among the diners, and had shown their skill as professional waiters, the strike subsided as quickly as it arose, and the supper proceeded without further hitch.

At the close of the supper John T. Bradley was appointed as sergeant-at-arms, to preside at the prize table, a post which he so ably filled at Chicago last year, while Elias D. Smith and John C. F. Trachsel again performed their duties as escorts to the prize winners.

The various winners were announced by different speakers, and as they advanced to the prize table they were given their choice of the center pieces, handbags, rugs, tea trays, parasols, etc., for the ladies, and scarf pins, umbrellas, coat hangers, etc., for the men. It was at an early hour in the morning when the party broke up.

The Ocean City Trip.

Although the convention adjourned Wednesday afternoon, many stayed over for the trolley trip to Ocean City and back, with a shore dinner at the Inlet Hotel. Special trolleys took the party to Ocean City and the return trip was made by boat to Longport, and thence by trolley to the Inlet.

Among the Exhibitors.

American Radiator Co., Chicago, had an exhibit of its new Arco Wand vacuum cleaner. The machine was shown in

operation and had the distinction of being the only vacuum cleaning apparatus shown at the convention. Circulars explaining its construction and operation were given out by A. B. Marshall, who was in charge.

Federal Engineering Co., Wilmington, Del., showed types of its Federal blow-off valves, including a cut section, illustrating why grit and sediment cannot lodge in this valve, also the absence of packing or springs. Inquirers were given full particulars of the valve by the inventor, William T. Fowden, of Chester, Pa., and by Howard L. Pyle.

H. and H. Bender and Hanger Co., 55 550-562 West 25th St., New York, had on exhibition a unique rod bender for use in making hooks, eyelets, pipe hangers, etc., out of straight iron rods. Those on hand for the company included Paul R. Heiland, manager, and E. T. Curry.

Patterson-Allen Engineering Co., 2 Rector St., New York, had on exhibition one of its 4-in. Patterson-Allen forged steel valves for use with high pressure and superheated steam. John H. Allen, general manager of the company, was present, and had many interesting things to say about its construction and durability.

Franklin Williams, 39 Cortlandt St., New York, distributed circulars illustrating the Neverust copper exhaust head. Emphasis was laid on the fact that the cast iron base and baffle are in one piece, and that its construction eliminates the liability of noise and back pressure.

Handy Mfg. Co., Bridgeport, Conn., had circulars on hand showing the Handy die stocks. H. S. Ashmun was in attendance in the interests of the company.

Homestead Valve Mfg. Co., Pittsburg, Pa., had circulars illustrating the Homestead valves and locking cock, including price lists.

Positive Differential System Co., 132 Nassau St., New York, distributed circulars of its vacuum return line and gravity return line heating systems. The company's interests were taken care of by James A. Donnelly, president and general manager, and G. C. Schmidt.

Brogan & Co., 810 Race St., Philadelphia, Pa., had circulars illustrating the Swenson self-grinding valves, made by the Bunting Brass & Bronze Co., Alliance, O.

A. Wyckoff & Son Co., Elmira, N. Y., exhibited its well known forms of Wyckoff patent steam pipe covering for exposed or underground steam pipes; also its wood stave steam pipe covering, intended to serve as a substitute and improvement on the solid log. It was made of seasoned white pine staves, 2 in. thick, jointed together, then wound with heavy galvanized steel wire and coated with asphaltum.

Other manufacturers represented were:

WARREN WEBSTER & CO., Camden, N. J.: Warren Webster, E. K. Lanning, L. H. Quackenboss and E. Kressler Webster.

AMERICAN BLOWER CO., Detroit, Mich.: Arthur Ritter.

GURNEY HEATER MFG. CO., Boston, Mass.: R. B. Hunt.

A. WYCKOFF & SON CO., Elmira, N. Y.: Peter O. Sutphen.

JENKINS BROS., New York: W. G. LeCompte and Jack Stiles.

AMERICAN RADIATOR CO., Chicago: C. K. Foster, W. M. Cosgrove, William F. Stearns, J. D. Erskine, A. B. Marshall, T. H. Huddleston and J. Barton Garfield.

H. W. JOHNS-MANVILLE CO., New York; Frank R. Austin, A. H. Hoff, A. S. Royal and John J. Greene.

RICHARDSON & BOYNTON CO., New York: D. Rait Richardson.

MASSACHUSETTS FAN CO., Watertown, Mass.: C. E. Lawrence.

H. B. SMITH CO., Westfield, Mass.: R. D. Reed, J. C. Faulkner, C. A. Miller, Theo. F. Humphrey, H. D. Kellogg and G. H. Chasmar.

PIERCE, BUTLER & PIERCE MFG. CO., Syracuse, N. Y.: E. C. Molby, E. H. Giles and J. M. Kipe.

UNITED STATES RADIATOR CORPORATION, Detroit, Mich.: E. E. McNair, T. Howell Johnson, George W. Barr and H. C. Call.

McCRUM-HOWELL CO., New York: Howard T. Gates, Frank E. Price, W. G. Culbert and J. D. Brady.

SIMS CO., Erie, Pa.: George D. Steele.

NOVELTY IRON CO., Canton, O.: F. M. Mechling, George E. Downe and Charles F. Morrow.

DETROIT LUBRICATOR CO., Detroit, Mich.: H. I. Lord.

KEWANEE BOILER CO., Kewanee, Ill.: Homer Addams.

MACKAY MFG. CO., New York: W. M. Mackay.

KEASBEY & MATTISON CO., Charles S. Wood and F. F. Cooper.

JOHNSON SERVICE CO., New York: H. D. Bristol and H. W. Ellis.

AMERICAN FOUNDRY & CONSTRUCTION CO., Pittsburgh, Pa.: J. V. Klingelhofer and J. D. Hiles.

NATIONAL RADIATOR CO., Johnstown, Pa.: John H. Waters and Charles N. Tull.

SPRAGUE ELECTRIC WORKS, New York: H. G. Issertell and G. E. Seward.

KENNEDY VALVE CO., Elmira, N. Y.: Daniel Kennedy.

D. G. C. VALVE CO., New York: R. J. Sovereign.

JENNISON MFG. Co., Fitchburg, Mass.: Walter Jennison.

UNITED BRASS MFG. CO., Cleveland, O.: E. T. Curry.

WM. H. PAGE BOILER CO., New York: W. P. Davenport and E. C. Moran.

SPENCER HEATER CO., Scranton, Pa.: David Boies and M. C. Gillett.

BROGAN & CO., Philadelphia: Frank F. Powderly.

GEORGE BENDER, New York: L. Moore.

BISHOP-BABCOCK-BECKER CO., Cleveland, O.: W. S. Ransom and G. L. Fitz.

KIELEY & MUELLER, New York: F. F. Powderly.

UNION RADIATOR CO., Johnstown, Pa.: H. A. Lewis and A. F. Sheahan.

LAWLOR REGULATOR CO., New York: Charles H. Hobson.

DEXTER ENGINEERING CO., New York: D. W. Moore.

ISAAC A. SHEPPARD & CO., Philadelphia: A. W. Proctor.

KEYSTONE SUPPLY CO., Philadelphia; Chas. H. Speakman.

NATIONAL TUBE CO., Pittsburgh, Pa.: C. R. Cummings and H. O. Ramsey.

SCOTT VALVE CO., Chicago: E. W. Leonard.

SHIRLEY RADIATOR & FOUNDRY CO., Indianapolis, Ind.: Fred W. Smith.

CRANE CO., Chicago: S. E. Lally.

MANNING, MAXWELL & MOORE, New York: Frank J. Corbett.
GLORE SUPPLY CO., Philadelphia: E. F. Glore.
PENN ENGINEERING CO., Philadelphia: H. H. Hellerman.
THATCHER FURNACE CO., New York: E. E. Barto.
FREED HEATER CO., Collegeville, Pa.: A. H. Pearson.
BOYNTON FURNACE CO., New York: William Ritchie.
ATWOOD & MORRILL CO., Salem, Mass.: C. P. Atwood.

The following registered, in addition to those already named:

Edward B. Denny, Newark, N. J.
John T. Bradley, St. Louis, Mo.
Juan O. Almirall, New York
W. H. Oakes, Boston, Mass.
C. A. Geoghegan, New York.
W. P. Kirk, Bridgeport, Conn.
P. F. Maginn, Pittsburg, Pa.
E. Grassler, Milwaukee, Wis.
G. H. Zellers, Washington, D. C.
J. T. Sadler, Elmira, N. Y.
Samuel Wright, Buffalo, N. Y.
Alfred E. Kenrick, Brookline, Mass.
John C. F. Trachsel, Philadelphia, Pa.
F. H. Trachsel, Philadelphia, Pa.
Henry B. Gombers, New York.
T. B. Cryer, Newark, N. J.
Henry Geiser, Newark, N. J.
P. Gormly, Philadelphia, Pa.
N. P. Bishop, New Haven, Conn.
J. Reynolds, Bridgeport, Conn.
F. L. Scott.
F. H. Meadows, Milwaukee, Wis.
C. J. Fox, Milwaukee, Wis.
U. G. Scollay, New York.
S. A. Jellett, Philadelphia, Pa.
C. P. McKnight, New York.
E. T. Child, New York.
M. G. Sellers, Philadelphia, Pa.
George F. Kirhoff, Indianapolis, Ind.
A. N. Chambers, New York.
Wm. I. Phillips, Brooklyn, N. Y.
Franklin Williams, New York.
W. J. Olvaney, New York.
W. H. Curtin, Brooklyn, N. Y.
J. S. Boyce, Asbury Park, N. J.
J. E. Rutzler, New York.
M. J. Callahan, New York.
John Geiger, Hackensack, N. J.
C. Kiewitz, New York.
E. B. Denny, Jr., New York.
Wm. J. Baldwin, Jr., New York.
Walter Lawson, Newark, N. J.
J. J. Collins, St. Louis, Mo.
J. H. Knepper, Buffalo, N. Y.
E. D. Smith, Elizabeth, N. J.
J. Buerkel, Boston, Mass.
William Dougherty, New York.
John B. Ruckel, Buffalo, N. Y.
W. H. Carnes, Buffalo, N. Y.
Chas. Geiger, Buffalo, N. Y.
E. F. Joy, Syracuse, N. Y.
J. F. Sheehan, Schenectady.
W. C. Miall, Pittsburg, Pa.
W. B. Armstrong, Albany, N. Y.
John C. Williams, New York.
John L. Earl, Newark, N. J.
Edward B. Steinmetz, Philadelphia, Pa.
A. W. Stewart, Philadelphia, Pa.
Henry F. Murphy, Philadelphia, Pa.
Henry Schmardar, Elizabeth, N. J.
J. F. Framden, Chester, Pa.
C. S. Eames, Bridgeport, Conn.
E. C. O'Malley.
J. O'Brien, New York.
D. J. Rice, New York.
R. R. Albertson, Atlantic City, N. J.
Jas. F. O'Keefe, New York.
Thos. J. Nicely, Philadelphia, Pa.
A. S. Boyd, Philadelphia, Pa.
J. F. Mullen, Philadelphia, Pa.
J. A. Langdon, Pittsburg, Pa.
W. J. Ballinger, Philadelphia, Pa.
G. E. Stewart, New York.
F. W. Burdick, New York.
S. H. Howland, Springfield, Mass.
H. E. Howland, Fitchburg, Mass.
W. H. Dolan, Fitchburg, Mass.
J. Corry, New York.
W. R. Park, Jr., Taunton, Mass.
F. W. Letter, Boston, Mass.
David Burns, Philadelphia, Pa.
T. P. Hill, Philadelphia, Pa.
J. Young, Allentown, Pa.
W. P. Thompson, Philadelphia, Pa.
C. C. Moran, Philadelphia, Pa.
A. W. Proctor, Philadelphia, Pa.
J. G. Kellar, Newark, N. J.
R. J. Haben, Philadelphia, Pa.
Nathan Miller, Fall River, Mass.
W. Gordon, New York.
Chas. H. Hobson, Lowell, Mass.
J. H. Bride, Lawrence, Mass.
C. C. Grimes, Lawrence, Mass.
C. J. Turner, Providence, R. I.
W. Douglas, Fitchburg, Mass.
L. P. De Groat, Philadelphia, Pa.
W. D. Barnhurst.
H. W. Chapman, New York.
D. W. Moon, New York.
F. E. Price, Pittsburg, Pa.
John D. Brady, New York.
K. Duff, Philadelphia, Pa.
W. G. McCormick, New York.
J. H. Robel.
Wm. B. Herbert, Philadelphia, Pa.
F. S. King, New York.
F. G. Sullivan, Albany, N. Y.
H. I. Ford, Detroit, Mich.
G. K. Anderson, Philadelphia, Pa.
A. S. Armagnac, New York.
F. K. North, Pottstown, Pa.
F. T. Ray, Philadelphia, Pa.
J. C. Adams, Philadelphia, Pa.
J. W. Breen, Philadelphia, Pa.
Harry G. Black, Philadelphia, Pa.
H. Huckley, Buffalo, N. Y.
L. M. Lewis, Philadelphia, Pa.
Chas. N. Beard, New York.
E. A. Scott, New York.
E. T. Curry, New York.
H. A. Lewis, Johnstown, Pa.
Jas. R. Colladay, Camden, N. J.
A. H. Green, Camden, N. J.
W. J. Marshall, New York.
C. R. Cummings, New York.
H. O. Ramsey, New York.
W. R. Watters, New York.
B. J. Newell, Trenton, N. J.
W. A. Warren, Trenton, N. J.
F. C. Eckfeldt, Philadelphia, Pa.
C. B. Kennedy, Pittsburg, Pa.
Jno. Klingler, Jr., Philadelphia, Pa.
Harry A. Walther, Philadelphia, Pa.
Daniel Kennedy, New York.
F. F. Cole, Detroit, Mich.
Jos. Graham, New York.

THE LADIES.

Mrs. John T. Bradley, St. Louis, Mo.
Mrs. J. A. Almirall, New York.
Mrs. W. H. Oakes, Boston, Mass.
Mrs. C. A. Geogheghan, New York.
Mrs. W. P. Kirk, Bridgeport, Conn.
Miss Katherine Wright, Buffalo, N. Y.
Mrs. N. P. Bishop, New Haven, Conn.
Mrs. J. Reynolds, Bridgeport, Conn.
Mrs. E. C. Molby, New York.
Mrs. U. G. Scollay, Brooklyn, N. Y.
Miss J. Scollay, Brooklyn, N. Y.
Mrs. Stewart A. Jellett, Philadelphia, Pa.
Miss Theodora Jellett, Philadelphia, Pa.
Mrs. E. T. Child, New York.
Mrs. E. C. O'Malley, New York.
Mrs. J. O'Brien, New York.
Miss A. Rice, New York.
Mrs. J. Corry, New York.
Mrs. M. G. Sellers, Philadelphia, Pa.
Mrs. W. J. Sellers, Philadelphia, Pa.
Mrs. H. E. Howland, Fitchburg, Mass.
Mrs. W. R. Park, Jr., Taunton, Mass.
Miss M. Park, Brooklyn, N. Y.
Mrs. H. D. Kellogg, Philadelphia, Pa.
Mrs. Henry B. Gombers, New York.
Miss J. W. Birge, New York.
Mrs. R. J. Hoben, Philadelphia, Pa.
Mrs. John C. Williams, New York.
Mrs. J. F. Sheehan, Syracuse, N. Y.
Mrs. Edward F. Joy, Syracuse, N. Y.
Mrs. William I. Phillips, Brooklyn, N. Y.
Mrs. A. S. Armagnac, Upper Montclair, N. J.
Mrs. Franklin Williams, New York.
Mrs. W. J. Olvaney, New York.

Miss S. J. Sloan, Pittsburg, Pa.
Mrs. Homer Addams, Philadelphia, Pa.
Mrs. Richard B. Hunt, Mt. Vernon, N. Y.
Miss B. C. Kryder, Philadelphia, Pa.
Mrs. L. H. Quackenboss, New York.
Mrs. J. C. Faulkner, New York.
Mrs. G. H. McLean, Springfield, Mass.
Miss R. Ashmun, New York.
Miss H. Huschburg, New York.
Mrs. H. W. Chapman, New York.
Mrs. W. D. Barnhurst.
Mrs. W. Gordon, New York.
Miss Ruth Gordon, New York.
Mrs. Charles H. Hobson, Lowell, Miss.
Mrs. J. H. Bride, Lawrence, Mass.
Mrs. C. C. Grimes, Lawrence, Mass.
Mrs. W. Douglas, Fitchburg, Mass.
Mrs. W. H. Curtin, Brooklyn, N. Y.
Misses Carrie and Mildred Curtin, Brooklyn, N. Y.
Mrs. J. E. Rutzler, New York.
Miss C. Rutzler, New York.
Mrs. M. J. Callahan, New York.
Miss J. J. Collins, St. Louis, Mo.
Mrs. J. Buerkel, Boston, Mass.
Mrs. P. O. Sutphen, Elmira, N. Y.
Mrs. John B. Ruckel, Buffalo, N. Y.
Mrs. W. H. Carnes, Buffalo, N. Y.
Mrs. F. L. Scott.
Mrs. W. J. Ballinger, Philadelphia, Pa.
Mrs. L. Moore, New York.
Mrs. J. Parry, New York.

Current Heating and Ventilating Literature.

Under this heading is published each month an index of the important articles on the subject of heating and ventilation that have appeared in the columns of our contemporaries. Copies of any of the journals containing the articles mentioned may be obtained from THE HEATING AND VENTILATING MAGAZINE *on receipt of the stated price.*

COOLING AND DRYING AIR.

Cooling and Drying Air. Charles H. Shaffer. Discusses the direct contact method of cooling and drying air; relative moisture content at different temperatures, etc. 3200 w. Ice & Refrig.—Apr., 1912. 40c.

CENTRAL PLANTS.

The Central Heating Station at the University of Manchester. Illustrated description of a plant for heating a group of buildings. 1200 w. Engng.—Apr. 12, 1912. 40c.

Hot Water Heating for the Central Station. Ira N. Evans. Discusses central station heating for cities and towns, and the requirements of large institutions and manufacturing plants. 4500 w. Power—Apr. 30, 1912. 20c.

FACTORIES.

Factory Heating from Fuel Saving Angle. William J. Baldwin and Ralph C. Taggart. Discusses important questions to be considered in deciding the general design and arrangement of the heating apparatus. Ills. 4000 w. Ir. Age—Apr. 25, 1912. 40c.

FLOW IN PIPES.

Loss of Head in Pipes Due to Velocity of Water. Full-page table compiled by the Engineers of the Union Iron Works Co., San Francisco; shows loss of head in every 100 ft. in length of pipes. Min. Sc.—Apr. 25, 1912. 20c.

HUMIDIFIER.

An Effective Mine-Air Humidifier. 1 Fig. 600 w. Mines & Min.—Apr., 1912. 40c.

An Engineer's Answer to Recent Criticisms of Modern Ventilation Practice.

Some of the arguments, recently presented in these columns on the subject of present-day ventilation practice, by Dr. W. Gilman Thompson, professor of medicine in the Cornell University Medical College in New York City, are answered by D. D. Kimball, of New York, in *The American Architect.*

"Granting for the moment," says Mr. Kimball, "that the necessity and efficiency of artificial ventilating systems are being seriously questioned, and questioned by persons of recognized authority in their line, it may be well worth while to investigate the basis and justness of the criticisms.

"That there are many criticisms, the basis of which may be traced to improperly designed and installed, or worse, improperly operated, systems is a fact known to every ventilating engineer, but nevertheless it may be positively asserted that, so far as known, no convincing or valuable data can be produced by those who criticize ventilation substantiating their assertions. Many of these attacks are as baseless as that of the physician who claims to have found air delivered by a ventilating system at 400° F. temperature, a manifest impossibility, for this would require a steam pressure in excess of 250 lbs. per square inch in the heating coils, and this, as every architect knows, is beyond the range of possibilities. Not a shred of scientific data supports these objections to the artificial ventilating system. Nor may it by contended that all, or even a majority, of the acknowledged authorities among physicians are opposed to the installation and use of ventilating systems.

"The old idea that the windows of a ventilated building should never be opened for fear that the ventilating system would become "unbalanced" is now regarded as absurd. Let the windows be used whenever possible, but by all means provide a ventilating system for use during the night and whenever weather conditions prohibit the use of windows, or when still or dull atmospheric conditions make for the failure of window ventilation. Artificial ventilating systems were developed because of the failure of natural or window ventilation more than forty years ago.

"With all the prevailing objections to, and criticisms of the artificial ventilating system in mind, it remains a fact that any factory, school, hospital or public building without an efficient modern ventilating system is incomplete and in itself limited in its efficiency."

Mr. Kimball says further: "A fixed or stationary temperature is desirable as long as one is inactive, but it is quite likely that

when possible a variation in temperature is desirable, for it is known that such a variation of temperature affects the blood pressure, tones up the system and that it is helpful in the treatment of some diseases."

Legal Decisions

Contributory Negligence of Radiator Company's Employee

A workman, of mature age, who had been in the employment of a radiator company for about two years, suffered a fracture of the left arm, necessitating its amputation, for which he sued his employers. It was part of his duty to keep running the "rattlers," or horizontal iron drums in which are placed the rough castings for the purpose of cleaning and smoothing. They were revolved by means of belts extending to and connected with pulleys on a line shaft attached to the ceiling some 10 or 12 ft. overhead.

When the plaintiff came to work on the morning of the accident, he found that one of these belts was off the line-shaft pulley. The defendant company had no belt shifters or other mechanical contrivances for the purpose of throwing the belts on or off. It was the habit of the men employed about the establishment to replace them by climbing a ladder to the line shaft and adjusting the belts by the aid of a piece of wood kept for that purpose; and this the plaintiff attempted to do. The witnesses all said that it was a dangerous thing to do this while the machinery was running; one of them stating that to put on a belt when the machinery was in full operation was "at the risk of your life." Verdict was returned for the plaintiff, but the judgment was reversed on appeal and judgment entered for the defendant. The non-compliance of the defendant with the provisions of the act requiring belt-shifters or other such mechanical contrivances was held to constitute negligence, and if the plaintiff was not guilty of contributory negligence the case was for the jury; but, if his own negligence did contribute to the accident, then binding instructions should have been given for the defendant.

To do an obviously dangerous thing which one is required to do in order to perform the duties of one's employment is an assumption of a risk, but not necessarily contributory negligence. If the statutory law requires guards against such a risk, and the employer has failed to comply with such a requirement, the defense of assumption of risk is not available to him, and, in the absence of contributory negligence, the plaintiff can recover. But to do an act necessary to the performance of one's employment in a way which is obviously dangerous when one can perform the act in another way known to him, which is reasonably safe, is contributory negligence which will bar a recovery, even though the employer may have been negligent in not complying with the requirements of the statute. The testimony was held to justify only one conclusion, that the plaintiff undertook to do an obviously dangerous act when he attempted to adjust the belt while the shaft was running at full speed. He was not justified by the habitual carelessness of his fellow-workmen in doing the same thing.—Solt vs. Williamsport Radiator Co., Pennsylvania Supreme Court.

Manufacturers' and Dealers' Protective Association.

At the annual meeting of the Manufacturers' and Dealers' Protective Association, held last month, in New York, Secretary F. R. Huntington reported that 15,000 claims, amounting to $1,250,000, had been adjusted by the association during the past year. Nearly one-third of this amount, or $470,000, was settled direct through the secretary's office.

Officers elected for the ensuing year were as follows: President, William M. Seymour; 1st Vice-President, John S. Simmons; 2d Vice-President, G. D. Dorsey; Treasurer, L. O. Koven; Secretary, F. R. Huntington; Assistant Secretary, H. M. Brunner; Board of Trustees, W. M. Seymour, J. S. Simmons, G. D. Dorsey, L. O. Koven, Joseph Keeler, E. E. Haff, F. A. Buckman, Walter S. Gibbs, Martin Behrer, George W. K. Taylor, Robert F. Seiffert, Thomas M. DeLaney and William J. Myers.

Boiler and Radiator Manufacturers' Association.

The annual meeting of the Boiler and Radiator Manufacturers' Association, held at the Hotel Astor, New York, June 10, was largely attended, and a note of optimism as to trade conditions was manifest. The following officers were elected for the ensuing year:

President, P. M. Beecher, Syracuse, N. Y.; vice-president, H. T. Cole, Detroit, Mich.; secretary-treasurer, William Ritchie, New York; directors, Charles K. Foster, Chicago; F. H. Moore, Utica, N. Y.; D. Rait Richardson, New York; R. D. Reed, Westfield, Mass., and John H. Waters, Johnstown, Pa.

Philadelphia Local Association.

At the annual meeting of the Philadelphia Local Association of Master Steam and Hot Water Fitters, held May 23, the

following officers were elected for the ensuing year:

President, Robert J. Hoben; Vice-President, William M. Anderson; Treasurer, Edward R. Steinmetz: Secretary, M. G. Sellers; Executive Committee, Joseph W. Breen, chairman; William P. Thompson and Harry Boon.

The Bicalky Air Washer

Among the interesting types of air washers, the Bicalky, made by the Bicalky Fan Co., Buffalo, N. Y., which has recently invaded the air washer field, is attracting much attention on the part of engineers and architects. The Bicalky Fan Company has won an enviable reputation for its other products and already reports orders for a large number of its new air washers and humidifiers, many of which are now in operation.

The trouble most frequently met with in air washers, that due to the clogging of the nozzles, has been given special attention in the Bicalky apparatus. The flushing or cleaning is done by means of a mechanical device consisting of a rigid shaft placed across the washer, which runs freely and is rotated by means of buckets filled with water from the spray nozzles. Cams are arranged on this shaft so as to operate a series of levers connected with the different rows of spray heads or nozzles, flushing them alternately. This provides against the possibility of any opening through which the dust can pass.

The spray heads are made in two different lengths and are arranged symmetrically so as to provide two complete mist sheets of water over the entire area through which the air must pass. In addition to these mist sheets, a mist-filled chamber is also provided, so that it is impossible for the air to pass through without being cleansed. The spray heads are operated automatically, and once in operation require no further attention.

Frequently the space allowed for an air washer is such that in order to get it in, it must be built tight up to the ceiling and side walls. These conditions have been provided for in the design of the "Bicalky," as all joints are made on the inside.

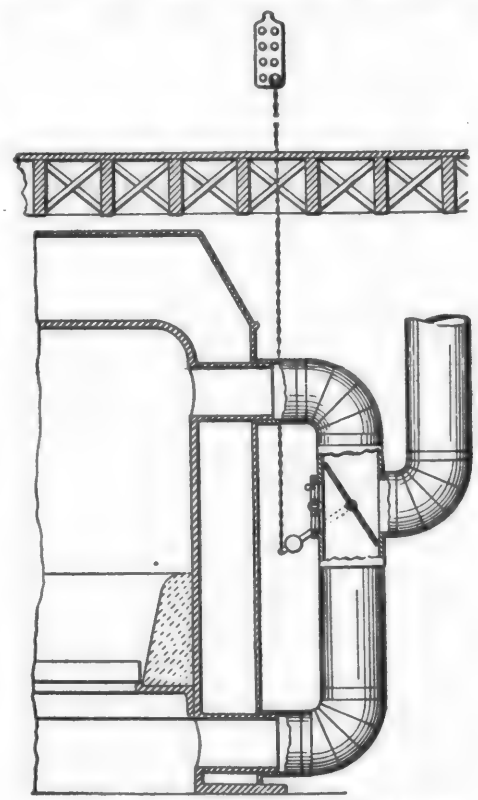
Another feature which will be appreciated by the man who pays the bills is the low operating cost. The "Bicalky," it is stated, gives the best results with from 7 to 10 lbs. per square inch water pressure.

The eliminator plates are arranged vertically and are set at such an angle as to remove all of the entrained moisture from the incoming air. A large screen area is provided in the sump and the screen can be removed, cleaned and replaced with but a moment's delay. Heavy gauge material is used in the construction, and all exposed surfaces are tinned or galvanized.

Access to the interior is provided by cast-iron doors set in the side, the doors being fitted with glass so as to allow inspection of the interior while the washer is in operation.

New Type of Damper.

A new type of damper for use in connection with warm-air furnaces or other heating apparatus has been designed by W. J. Moreland, of Mottville, N. Y., and is shown in the accompanying illustration. The aim of the inventor is to provide a form of damper by means of which the furnace draft may be carefully governed, the damper being especially adapted for operation in parts of the house remote therefrom. The invention provides complete control of the fire from direct to reversed draft, with one chain running to



NEW TYPE OF DAMPER FOR HEATING APPARATUS.

rooms above; and provides relief from dust and gas when joints in a stove or furnace become imperfect from long use or any other cause. The construction is simple and does away with the ordinary check and other dampers. Heating appliances can be manufactured as cheaply with this improvement as without. The engraving shows a side view, partly in section, representing a furnace flue equipped with the invention.

Heating Office Buildings By Electricity.

Cheap hydro-electric power, generated on the Snake River, Idaho, has developed the

city of Twin Falls very rapidly and according to a writer in the *Scientific American*, has even rendered practicable the electric heating of buildings. In place of steam radiators electric heating units have been installed in the vicinity of Twin Falls to the extent of nearly 1,000 kilowatts connected load. A 6-room house having eight outlets uses $70 to $100 worth of electrical energy during the season of eight months. A building having stores and offices on the first floor and a ballroom on the second floor uses 100 kilowatts for the season, costing $625. Three-phase current is brought into this building through an underground conduit at 2,300 volts and transformed to 220 volts for the forty electric radiators and a water-tank heater which keeps water continually at the boiling point through thermostatic control. The size of the building is 50 by 120 ft., and the electrical equipment cost about $1,000, exclusive of the cost of the transformers, which were furnished by the power company.

Porous Glass for Ventilation Purposes.

A porous glass for ventilation is being made in France, the holes being small enough to exclude dust and drafts.

Trade Literature.

Looking Backward, 1877-1912, is a publication issued by the L. H. Prentice Co., Chicago, Ill., engineer and contractor for steam and hot water heating, ventilating apparatus, power plants, power piping, hot blast heating, mechanical ventilation and stationary vacuum cleaning systems. Its contents are devoted largely to lists of buildings and views of same in which the mechanical equipment has been designed by the L. H. Prentice Co. The company states that its experience now covers a period of 35 years and nearly every part of the country as well as Canada is represented in its list of installations. The booklet is handsomely gotten up. Size 4x9 in. Pp. 32.

Standard Pumping Engines for Water Supply, showing designs adapted to shallow wells, cisterns, lakes or rivers and others adapted to pump from deep wells, operating with gas or gasoline engines, electric motor or hand power, for suburban homes, hospitals, infirmaries, greenhouses, truck farms and isolated institutions, is the title of a new catalogue, published by the Standard Pump & Engine Co., Cleveland, O. The catalogue is profusely illustrated, showing not only the various types of the company's line, but also designs for typical installations, giving practically complete layouts. Size 8¼x11 in. Pp. 38.

Paul System Apparatus and Appliances are described in newly issued circular matter published by James E. Heg & Co., Fisher Building, Chicago, Ill. Among the devices shown are the Paul double steam exhausters, Paul single steam exhauster, Paul hydraulic exhauster, Paul system air-line pumps. Regarding the use of the Paul system, the company makes the interesting statement that more than 5,000 Paul systems have been installed containing fully 14,000,000 square feet of radiation.

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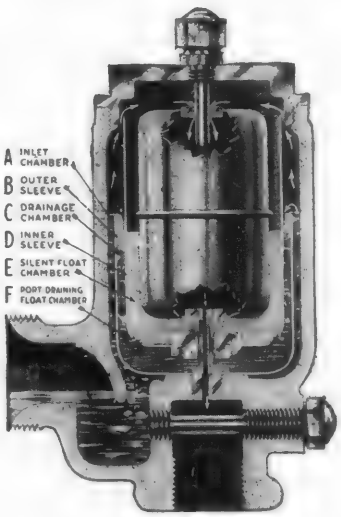
VALVES FOR VACUUM HEATING SYSTEMS

THE SILENT FLOAT CHAMBER IN THE

MONASH RADIFIER

MAKES ITS OPERATION ABSOLUTELY NOISELESS



In the MONASH NOISELESS RADIFIER the float and drainage chamber are separate, each to perform its individual function. In the drainage chamber (C) drainage into the return is direct, rapid and absolute. In the silent chamber (E) the body of water is always still with a slight and gradual lowering of the line of flotation—thereby insuring silence in action of the motor float.

ATTENTION—To Heating Engineers who are interested in specifying Vacuum Heating Systems and who will write us on their letterhead, we will send our ***Book of Blue Prints*** showing typical installations for MONASH NOISELESS SYSTEM of Vacuum Heating. The information contained in this book has never before been published. Write at once as the edition is limited.

MONASH-YOUNKER CO.

121 W. 42d Street, New York **1420 W. Jackson Boulevard, Chicago**

TRADE AND MISCELLANEOUS NOTES

Coming Events.

July 11-12, 1912—Mid-summer meeting of The American Society of Heating and Ventilating Engineers, Detroit, Mich. Headquarters at the Hotel Tuller.

July 16-18, 1912—Thirtieth annual convention of the National Association of Master Plumbers, Salt Lake City, Utah. Headquarters at the Hotel Utah.

September 2-7, 1912—Sixth congress of the International Association for Testing Materials, New York. Headquarters at the Engineering Societies Building.

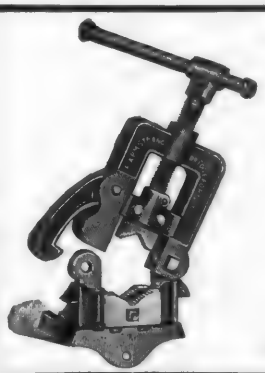
September 24-26, 1912—Fourteenth annual conference of the American Hospital Association, Detroit, Mich.

Deaths.

Theodore Albert, president of the William Powell Co., Cincinnati, O., manufacturer of valves, died in that city May 29. He was 59 years old.

Henry C. Richardson, senior member of the firm of Richardson & Clement, Boston, Mass., heating and plumbing contractors, died at his home in that city, May 27. He was 57 years old and was well known in the boiler and heater trade throughout the country. Mr. Richardson was married but ten days before his death. the marriage date having been set forward on account of an anticipated operation for stomach trouble. Mr. Richardson entered the heating business as an apprentice to Richardson & Bentley, of which firm his father was a member. He was subsequently foreman for Braman, Dow & Co. During his journeyman days he served as president and for many years as treasurer of the old Steamfitters' Union. During the administration of Mayor Curtis Mr. Richardson was Superintendent of the Water Department. He was a presidential elector in 1900, voting for President McKinley.

William N. Tobin, Syracuse, N. Y.,



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No. 1	" "	⅛	" 2 ⅜	"	16 " "
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THE McCREERY AIR SCRUBBER

Spray alone will not wash out **soot** and other **oily particles** from the air. These are what produce the **"smoke nuisance."**

Our Air Washers have therefore always been built with wet **cleaning surfaces** to catch the dirt and assist in humidifying and cooling the air.

The **flushing spray heads,** brought out by our Company, are now recognized as necessary to the uninterrupted operation of Air Washers and are specified by the leading Engineers.

The **Experimental Plant** originally installed by us in 1907, has been remodelled from time to time in order to obtain valuable knowledge of air conditioning.

We specialize in **Industrial Work,** as the high efficiency of our cleaning and humidifying device enables us to overcome difficult conditions.

CORRESPONDENCE SOLICITED

McCREERY ENGINEERING COMPANY, DETROIT, MICH.

Please mention THE HEATING AND VENTILATING MAGAZINE *when you write.*

a well-known heating and plumbing contractor, died at his home in that city, June 4. He was 53 years old. Mr. Tobin had retired from business on account of illness. He leaves a widow and four sons.

Miscellaneous Notes.

Portland, Ore.—Application for a franchise for a central heating system to cover the Willamette Heights and Westover Terrace residence section has been made to the city council by F. E. Dooley, John H. Hall, L. H. Tarpley and W. O. Van Schuyver. The proposed franchise is to run 25 years and will provide for heat for all domestic purposes at the rate of 35 cents per square foot of direct radiation. Heat is to be supplied for eight months each year, beginning September 15.

Louisville, Ky.—With the closing of a deal for the Kentucky Electric Co., which is expected to go through in a short time, Byllesby & Co., who purchased the Nashville Railway & Light Co., will have paid approximately $6,000,000 for heat and light utilities in Louisville. It is reported that a company headed by Samuel Insull, who is allied with the Byllesbys, has purchased the heat, light and traction franchises of New Albany and Jeffersonville. It is believed that a merger of the heat, light and traction companies of the three Falls Cities is the ultimate object.

New York Bunch of Sheep held its first annual banquet at Keen's Chop House, New York, May 22. Grand Ram William M. Murray acted as toastmaster. Among the speakers were Frank K. Chew who responded to "The Future of the Salesman," J. M. Heatherton, who discussed "General Topics of Trade Interest," Eugene J. Kenny, M. D., and Shearer John Gannon. Over fifty members were present.

Ashley & Kaufman, New York, consulting engineers, announce the opening of a permanent branch office at 14 International Amphitheatre, Union Stock Yards, Chicago, Ill. The office will be in charge of John Fallon, formerly of the Tennessee Copper Co. Ashley & Kaufman have been retained as consulting engineers on the heating, lighting and sanitary engineering for the Union Stock Yards and the Central Manufacturing District.

National Pipe and Supplies Association, the new combination of the National Association of Jobbers of Wrought Pipe and Fittings and the National Association of Jobbers of Plumbing Supplies, has removed its general offices to Pittsburg, where quarters have been taken in the Henry W. Oliver Building. The new secretary of the association is George D. McIlvaine, of Pittsburg, who is now in charge at headquarters. The association reports 207 firms on its roll of members, representing a selling power of goods valued at $250,000,000 in annual sales. In a statement announcing the appointment of Mr. McIlvaine as secretary, President J. P. Harnett states that Mr. McIlvaine is well and favorably known to many of the members and will devote his undivided time and energy to the association's affairs.

The full list of officers of the organization are as follows:

President, J. P. Hartnett, L. M. Rumsey Manufacturing Co., St. Louis; first vice-president, A. L. C. Scott, Pacific Hardware & Steel Co., San Francisco; second vice-president, Oscar J. Saxe, Dalton-Ingersoll Manufacturing Co., Boston; treasurer, C. J. Cornell, Jr., Cornell & H. Underhill, New York; secretary, George D. McIlvane, Pittsburgh; executive committee, F. M. Sheldon, Braman, Dow & Co., Boston; A. A. Merkel, Merkel Bros., Cincinnati; W. M. Pattison, W. M. Pattison Supply Co., Cleve-

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THE INDUSTRIAL INSTRUMENT COMPANY, Foxboro, Mass.

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BETTER THAN LEAD

Dixon's Pipe Joint Compound is better and cheaper than red or white lead.

Doesn't "set" joints—goes farther.

JOSEPH DIXON CRUCIBLE COMPANY, Jersey City, N. J.

land; W. T. Todd, Somers, Fitler & Todd, Pittsburgh; George V. Denny, Georgia Supply Co., Savannah; J. B. Rahm, United States Supply Co., Omaha; George H. Bailey, Bailey-Farrell Manufacturing Co., Pittsburgh; A. A. Tomlinson, Virginia-Carolina Supply Co., Norfolk; advisory board, A. E. Ford, Ford & Kendig Co., Philadelphia; Charles H. Simmons, John Simmons Co., New York; C. V. Kellogg, Kellogg-Mackey Co., Chicago.

Fort Dodge, Ia.—The Fort Dodge Light & Power Co. has submitted a tentative ordinance to the city council relating to a central heating plant which the company proposes to build at that place. It is expected that the system will supply at least 100 buildings as soon as completed.

Gloversville, N. Y.—The Common Council has granted a franchise to the Vacuum and Steam Heating Co., of Gloversville, permitting it to make use of the city's streets to supply steam from a central plant for heating purposes. Among the local men interested in the enterprise are J. W. Green, E. C. Naylor, E. S. Parkhurst, L. N. Littauer, E. L. Durkee and F. L. Comstock.

Lebanon, Ind.—The Lebanon Heating Company's plant, built three years ago at a cost of $100,000, has been sold by the receiver, A. M. McMillan, to the Citizens' Electric Light and Power Co., of Lebanon, for $65,115. The plant is bonded for $54,000. It will require the entire proceeds of the sale to liquidate a number of liens filed against the plant.

Columbus, Ind.—An inspection has been completed by the local board of health of all theatres and places where men and women congregate for amusement, and its report asks the co-operation of the police in securing better ventilation for the moving picture shows and poolrooms.

Laclede Gas Light Co., St. Louis, Mo., announces that it is prepared to offer gas for residence heating purposes at a special rate of 50 cents per 1,000 cu. ft. The present rates for lighting and fuel gas are 80 cents per 1,000 cu. ft. for the first 10,000 cu. ft., and 60 cents per 1,000 cu. ft. net for all over this amount. The heating gas will be supplied through a special meter, and the standard appliances now on the market installed. The Laclede Company's plant has a producing capacity of 22,000,000 cu. ft. per day, of which 6,500,000 cu. ft. is coal gas and 15,500,000 cu. ft. is water gas.

St. Louis, Mo.—The Heat and Power Contractors' Association has adopted a resolution agreeing to support its membership in any difficulty any of the members may have in executing their contracts owing to the present strike of mechanics. The contractors have a working agreement with the International Association of Journeymen Steam Fitters which the United Association of Journeymen Plumbers is attempting to absorb. Building operations have been further complicated through a demand on the part of the hoisting engineers for a new scale, to be effective July 1, providing for an increase from 62½ cents an hour to 75 cents an hour for operating an engine and boiler to which one machine is attached. If two or more machines are operated the scale is fixed at 87½ cents.

Economy Heating Co., Charlotte, N. C., which holds the recently granted franchise for the installation of a central heating, lighting and power plant at that place, has organized with the following officers: President, Sterling Graydon; secretary and treasurer, John R. Purser.

Austin, Minn.—A party of 20 citizens visited Albert Lea recently to install the central heating plant at that place, with a view of establishing a municipal heating plant in Austin. Those in the party included Mayor A. C. Page, J. D. Sheedy, John Gulden, C. A. Pooler and Supt. William Todd of the Austin electric lighting plant.

Fort Worth, Texas.—The master plumbers of Texas have agreed to dis-

Jenkins Bros. Y or Blow-off Valves

are especially adapted for use where the unobstructed flow of thick fluids is required. As blow-off valves they have no superior. Having a full opening nearly in line with the pipe, but little resistance is offered to the free flow of steam or fluids. Have Jenkins Discs, removable seat rings, and interchangeable parts throughout. Made in Brass or Iron body.

WRITE FOR ILLUSTRATED CATALOGUE

JENKINS BROS., New York, Boston, Philadelphia, Chicago

continue the practice of furnishing estimates for heating and plumbing work to general and other contractors and to figure only with owners and architects. The resolution went into effect July 4.

Athens, Ga.—The University of Georgia will ask the legislature at the approaching session to appropriate a sufficient sum to provide for a central heating plant for the university. The amount needed will be from $25,000 to $30,000.

Buffalo, N. Y.—A temporary injunction has been granted John G. Thomas in a taxpayer's action, restraining the city from executing a contract with the John W. Danforth Co. for the installation of a heating system in the J. N. Adams Memorial Hospital at Perrysburg. As announced in our last issue, the Danforth Company was given the contract for this work after the Foster-Glidden Company and Architect John S. Coxhead had been discharged on the claim that the plans had been altered.

Eastern Supply Association and Central Supply Association held separate and joint meetings at Atlantic City July 9 and 10. Headquarters were at the Hotel Dennis.

Indianapolis, Ind.—The city board of health is making its annual inspection of the moving picture theatres in Indianapolis. So far about 40 such theatres have been inspected, and most of them have been reported to be in a satisfactory condition and properly ventilated.

Cleveland, O.—Protests against the passage of the ordinance granting the Cleveland Electric Illuminating Company the right to extend its heating conduits has caused the city council to refer the measure to the council committee on streets. The opposition came from the local organizations of licensed steam and stationary engineers. The argument was advanced that the city should grant no more steam heating franchises, because it is planning to build a light and power plant of its own.

Frank G. McCann, chief engineer of the heating and ventilating division of the New York City Department of Education, was presented with a gold watch from his staff on the occasion of the tenth anniversary of his appointment, June 18. The watch is of the open-face type. The back is inscribed with his monogram, while the inner case bears an inscription reading: "Presented to Frank Goodman McCann on the 10th anniversary of his appointment as chief of the H. & V. Div., Building Bureau, Board of Education, June 18, 1912." The

"Dead Air" Will Save Thousands of Dollars for Your Clients on Their Coal Bills

As heat cannot pass through motionless or "dead" air, it follows that the more of this "dead" air which a pipe covering contains, the higher will be its insulating efficiency.

The only low-pressure covering which confines air in an absolutely "dead" condition, without circulation, and which contains more of these air spaces than any other covering of this type, is

J-M ASBESTOCEL
PIPE COVERING

In ordinary low-pressure coverings the air-channels run from end to end of the pipe, permitting a free circulation of the air. In J-M Asbestocel Pipe Covering the air cells run **around** the pipe, preventing the air from getting into motion. This **hollow arch** construction also makes this covering far stronger than other kinds. It will last for years.

Write our nearest Branch for sample, booklet and full information.

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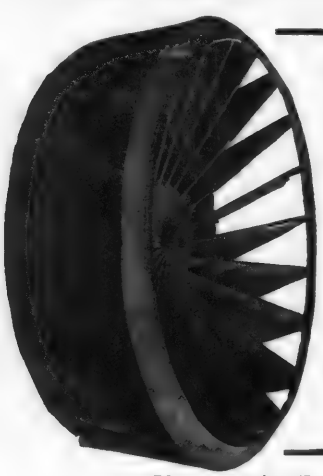
Buffalo	Los Angeles	Pittsburgh
Chicago	Louisville	San Francisco
Cincinnati	Milwaukee	Seattle
Cleveland	Minneapolis	St. Louis
Dallas	New Orleans	Syracuse

1492



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for all purposes. The only radical improvement in fans in forty years. Takes up less room, runs at slower speed, requires less power, noiseless in operation.

We guarantee our Cycloidals to equal in capacity any fan built—We bar none—with from 20 to 25 per cent. less speed and power. We build them in all sizes to suit all conditions—hundreds of them in use—not "as good—but better."

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presentation was made by David Donald, at the Department of Education Building, in the presence of the men composing his staff.

Manufacturers' Notes.

Carrier Air Conditioning Co. of America, Buffalo, N. Y., announces the opening of a branch office in Chicago, at 1001 Fort Dearborn Building, Clark and Monroe Sts., under the management of Donald Stuart and A. E. Stacey, both of whom have been associated with the company for a number of years. The company also announces that its Philadelphia office has been removed to 732-734 Real Estate Trust Building, that city. E. T. Murphy will continue in charge of this territory, which embraces Eastern Pennsylvania, southern part of New Jersey, Delaware, Maryland and Virginia.

H. W. Johns-Manville Co., New York, announces the removal of its Winnipeg branch to new quarters at 92 Arthur St., Winnipeg, where the company will occupy a six-story and basement building, 100x50 ft., to take care of its rapidly increasing business in asbestos, magnesia and electrical supplies.

United States Radiator Corporation, Detroit, Mich., announces the appointment of E. E. McNair as sales manager, succeeding F. W. Herendeen. E. W. Sanborn has been appointed assistant sales manager.

Fairbanks-Morse Co., San Francisco, Cal., will occupy a new six-story and basement building on Mission St., which it has recently leased.

National Steam Specialty Co., Chicago, has acquired the sole right to manufacture and sell the "B" heating specialties, formerly manufactured by the Bottom Valve Co., of Chicago, the transfer having taken place June 1.

Tyler Underground Heating Systems, Pittsburg, Pa., report that their material has just been installed at the automobile plant of the Nordyke Marmon Co., at Indianapolis, Ind. This factory is being heated by steam conveyed to the plant through pipes insulated with Tyler underground ditch casing. The company's ball-bearing wall brackets and Tyler anchors are being installed in the tunnel of the Ohio State Penitentiary at Columbus, O.

American Radiator Co., Chicago, has purchased 15 acres of land from the North Birmingham (Ala.) Land Co., on which it will build a large radiator manufacturing plant. The land is located near 35th St. and 4th Ave., North Birmingham, Ala. The cost of the plant is estimated at $500,000, and it will employ between 500 and 600 men. The company has been manufacturing radiators in that

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The Largest School—Jersey City High
John T. Rowland, Jr., Architect. Frank Sutton, Engineer

The Largest Residence—Chas. M. Schwab
Maurice Hebert, Architect. Alfred R. Wolff, Engineer

The Largest Building—Woolworth
Cass Gilbert, Architect. L. E. Eden, Engineer

The Largest Mill—American Velvet Mills
Russell G. Cory, Architect and Engineer

Are Equipped With The

STANDARD SYSTEM

OF

AUTOMATIC TEMPERATURE CONTROL

STANDARD SYSTEM of HUMIDITY CONTROL

"Victor" Hot Water Regulators
"Victor" Hydraulic Damper Regulators
"Victor" Hydraulic Pressure Regulators

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STANDARD REGULATOR COMPANY

90 West Street, New York

territory at a small plant in Birmingham. The sale is the result of long-drawn out negotiations for a site in various localities around Birmingham.

Pressed Radiator Company of America, Pittsburg, Pa., is the defendant in a number of actions brought against the company for amounts owing. An action was entered by F. C. Perkins on May 29 for $115,620 to recover on twenty-three collateral notes amounting to $73,620, and fourteen promissory notes for $42,000. W. N. Murray has an action for $14,250 on seven promissory notes. John W. Garland has an action for $27,938.33 on ten promissory notes, and John K. Frye has entered an action for $12,000 on three promissory notes. The return day of the several writs was the first Monday of June. It is reported that the company is shortly to undergo reorganization.

New Incorporations.

National Steam Heater Co., Dayton, O., capital $50,000, to manufacture heaters. Incorporators—James Sanders, Carl F. Deal, Joseph Meyer, Edward L. McCleary and Elwood C. Bayer.

St. Joseph Heating Co., South Bend, Ind., capital $100,000, to transport and convey heat to its patrons through underground pipes running from a central plant. Directors—F. A. Bryan, Lowell M. Chapin, both of South Bend, and Charles A. Chapin, Chicago.

Moyer Plumbing & Heating Co., Cincinnati, O., $5,000. Incorporators—W. A. Moyer, George F. Ender, George B. Mills, Charles E. Brown and George C. Brown.

Los Angeles Vacuum Gas Heating Co., Los Angeles, Cal., capital $150,000. Directors—W. O. Morton, R. F. Cook, C. B. Morton, M. Butterfield and A. Fine.

Chicago Heating Appliance Co., capital $200,000. Incorporators—Drury F. Livesey, Fred W. Lorenz and Maurice J. Golan.

Magill Plumbing & Heating Co., Kansas City, Mo., capital $2,000.

Brady & Schall Co., Newark, N. J., capital $25,000, to conduct a contracting business in heating, ventilating, plumbing and tinning work. Incorporators—M. J. Brady, P. A. Schall, M. J. Brady and M. A. Schall, all of Newark.

Hasse-O'Neill Co., Quincy, Ill., capital $2,200, to conduct a heating and plumbing business.

Allen Plumbing Co., Presque Isle, Me., capital $10,000. Incorporators—J. Eugene Allen, George P. Noyes and Roy M. Barker.

Brainard Plumbing Co., Cleveland, O., capital $10,000, to conduct a heating and

"SIROCCO"
The original turbine type

Space and Power Saved

"Sirocco"
TRADE MARK.

Heating and Ventilating Fans

Have immense capacities for their size---large or small.

Can be installed in spaces so confined as to preclude other types.

Bulletin 340-HV explains space and power saving features and gives complete description. Where shall we send YOUR copy?

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CANADIAN SIROCCO COMPANY, Limited
WINDSOR, ONTARIO — Manufacturers for Canada

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plumbing contracting business at 2064 East 22nd St. Manager, O. N. Brainard, of the firm of Dewstoe & Brainard Co., Cleveland, which dissolved recently. Others who will take an active interest in the business are H. Z. Brainard and Allen Watkins.

Robert Scott, Inc., capital $50,000, to deal in heating and plumbing supplies, at 419 Market St.

Bunting Stevens Co., Boston, Mass., capital $21,000, to conduct a heating and plumbing business. Incorporators—William Bunting and Ralph V. Bunting, Brookline, Mass.

Sackville Plumbing & Heating Co., Ltd., Moneton, N. B., incorporated to take over business of W. Amos Lawrence, at that place.

Central Heating Co., Milwaukee, Wis., capital $100,000. Incorporators—William F. Adams, S. J. McMahon and J. Gilbert Hardgrove.

Continental Foundry Corporation, Fort Madison, Ia., capital $250,000, to manufacture heating boilers and radiators. Among the principal men interested is F. L. Ostrander, of St. Louis, Mo. The company has purchased a plant at Fort Madison, to be ready for operation by September 1 next.

Chicago Heating Appliance Co., Chicago, capital $200,000, to manufacture heating specialties. Incorporators—Drury F. Livesay, Fred W. Lorenz and Maurice J. Golan.

Jarvis Gas Burner Heating & Plumbing Co., Little Rock, Ark., capital $50,000. The company has opened offices at 308 East 8th St., Little Rock.

New Firms and Business Changes.

Fargo Plumbing & Heating Co., Fargo, N. D., has been acquired by P. W. Farnham, to whom W. J. Price, the president of the company, has sold his interest. Mr. Farnham has been secretary and treasurer of the company for several years.

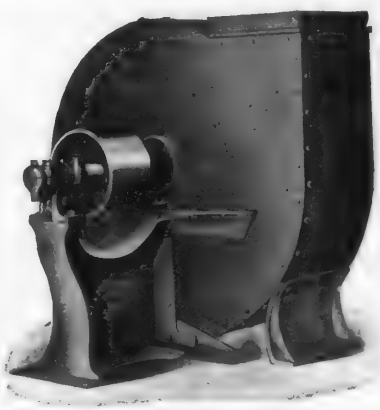
Norwich Plumbing Supply House, 55 West Main St., Norwich, Conn., has been organized by Elkin Smith to conduct a jobbing business in heating and plumbing supplies.

Business Troubles.

Albright Plumbing & Heating Co., South Bend, Ind., has failed, with liabilities of $1,343 and $35 assets. The firm was composed of Lawrence E. and Ralph D. Albright.

Business Chances.

Olivet, Mich.—A $50,000 central heating plant will be installed at Olivet College during the summer. The board has already voted $15,000 for this purpose.



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Dayton, O.—County Commissioners Munger, Fair and Gebhart have approved the plans and specifications for the installation of a new heating and plumbing system at the county infirmary. A bond issue of $10,000 will be made to cover the cost of the plant.

Washington, D. C.—Sealed proposals will be received at the office of the Supervising Architect, Treasury Department, for the following named work:

Until July 15, 1912, for the construction, including plumbing, gas piping, heating apparatus, electric conduits, etc., of the United States Post Office at Fairmount, W. Va.

Until July 16, 1912, for the extension, remodeling, etc., including plumbing, gas piping, heating apparatus, etc., of the United States appraisers' stores at Galveston, Tex.

Until July 18, 1912, for the mechanical equipment (except freight elevator and lift) of the United States Post Office at Jersey City, N. J.

Contracts Awarded.

Inland Heating and Ventilating Co., Spokane, Ida., heating and plumbing new high school building at Wallace, Ida., for $4,765.

Lewis & Kitchen, Chicago, heating and ventilating court house at Phillips Price, Wis., for $5,185. W. S. Patterson Co., Appleton, Wis., bid $5,474 for the work. This firm also has the contract for heating, ventilating and plumbing new school buildings at Grand Ledge, Mich.

Linehan & Molo, Dubuque, Ia., heating and ventilating high school and central school buildings at Manchester, Ia., for $10,000; also installing vacuum cleaning system in the high school.

Greene Bros., Kansas City, Mo., heating and ventilating new $50,000 high school at Clear Lake, Ia., for $16,000.

Stuckey & Wood Plumbing Co., Pine Bluff, Ark., heating and plumbing for Jefferson Hotel, at that place.

Monarch Plumbing & Heating Co., Montgomery, Ala., heating and plumbing Federal Building, at that place, for $5,000.

Reliable Plumbing & Heating Co. Champaign, Ill., heating and plumbing new Transportation Building, heating and ventilating West Frankfort St. school, and heating and plumbing court house at Benton, Ill.

Englehart Heating Co., Atlanta, Ga., heating and ventilating new 37th St. school for $2,700. Other bids were: Barfield-Chapman Co., $2,955; Savannah Heating Co., $2,910; Peerless Heating Co., $2,999, all of Savannah. Atlanta Heating Co., $2,800.

Lewis & Kitchen, Kansas City Mo., hot blast heating system for Bryant School, at 18th and Q Sts., Lincoln, Neb., for $5,252.

Kirkman & Young, Cedar Rapids, Ia., steam heating hospital building at Van Horne, Ia.

Western Heating & Ventilating Co., Ogden, Utah, heating and ventilating three school buildings of Box Elder County for $5,847.

Holtman Heating Co., Topeka, Kan., steam heating new apartment house at 919 Quincy St., for J. W. Wilson. The plant is one of the largest to be installed in Topeka this year. The Favorite system of heating will be used.

Reliable Heating Co., Champaign, Ill., heating and plumbing new high school at Virginia for $4,800.

Mangrum & Otter San Francisco, Cal., steam heating hotel at Howard and 3rd Sts. for Dr. A. W. Morton for $3,750.

Downey Heating & Supply Co., Milwaukee, Wis., heating new county School of Agriculture and Domestic Economy at Wauwatosa for $26,370.

P. Gormly, Philadelphia, Pa., heating hotel at Naomi Pines, Pa.

Robert Scott Engineering Co., Philadelphia, Pa., heating Wanamaker residence, at Ogontz, Pa.

Stone & Underhill, Boston, Mass., heating and ventilating Pleasant St. school, at Marlboro, for $5,000.

McAree Bros., Haverhill, Mass., heating, ventilating and plumbing new school building at that place for St. Joseph's Church.

Pacific Blower & Heating Co., San Francisco, Cal., was the low bidder, at $3,325, for the heating and ventilating of the Washington grammar school at Stockton, Cal. The company has the contract for heating and ventilating work on new grammar school building at Oroville, Cal., to cost $3,800.

Brown Bros., Saginaw, Mich., heating, ventilating and plumbing for the new Arthur Hill Trade School at that place for $15,000.

Grambs & Peet Co., Bismarck, N. D., heating and plumbing new Northern Pacific Hospital, at Glendive, Mont., for $15,000; also heating and plumbing office building at Bismarck for $15,000; also heating and plumbing new government school at Fort Yates for $6,000.

John M. Dougherty, St. Louis, Mo., heating and plumbing new building for St. Patrick's School for $4,700.

Elliott & Barry Engineering Co., St. Louis, Mo., heating new First National Bank Building at Roswell, N. M., and the new Paso Del Norte Hotel, at El Paso, Texas.

Mueller Co., Milwaukee, Wis., heating and ventilating dome of new Capitol at Madison, for $16,770.

H. L. Hurlburt, Philadelphia, Pa., heating sixteen new houses at Lansdowne Ave. and Wanamaker St., Philadelphia, for Peter McCurdy.

C. E. Monday & Co., Philadelphia, Pa., heating West Philadelphia High School; also building at Recreation Grounds, at 26th St. and Jefferson Ave.

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Wm. H. Jackson Co. Building, 2 West 47th St.	Maynicke & Franke
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22d Regiment Armory, Broadway,	Walker & Morris
International Headquarters, Y. M. C. A., East 28th St.	Parrish & Schroeder
N. Y. Historical Society, 76th St. and Central Park West	York & Sawyer
Knoedler Building, 46th St. and Fifth Ave.	Carrere & Hastings
Long Island College Hospital, Henry and Pacific Sts., Brooklyn,	D. Everett Wade
F. A. O. Schwartz Building, 31st St. and Fifth Ave.	Maynicke & Franke
Merchants Exchange Building, 17th St. and Fifth Ave.	Maynicke & Franke
Haviland China Co. Building, 37th St., near Fifth Ave.	Pilcher & Tachau
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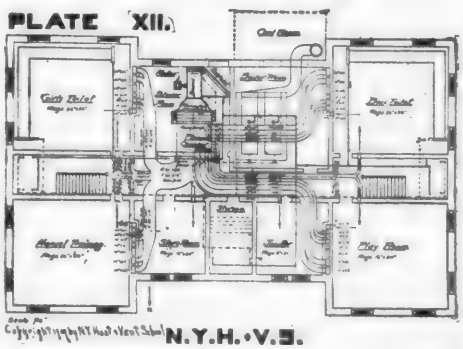

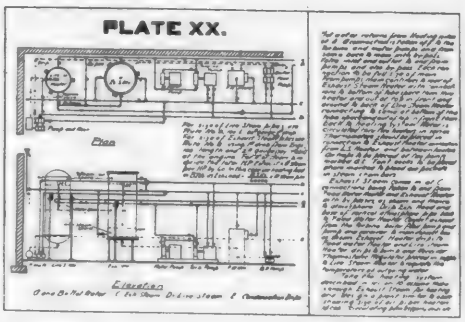

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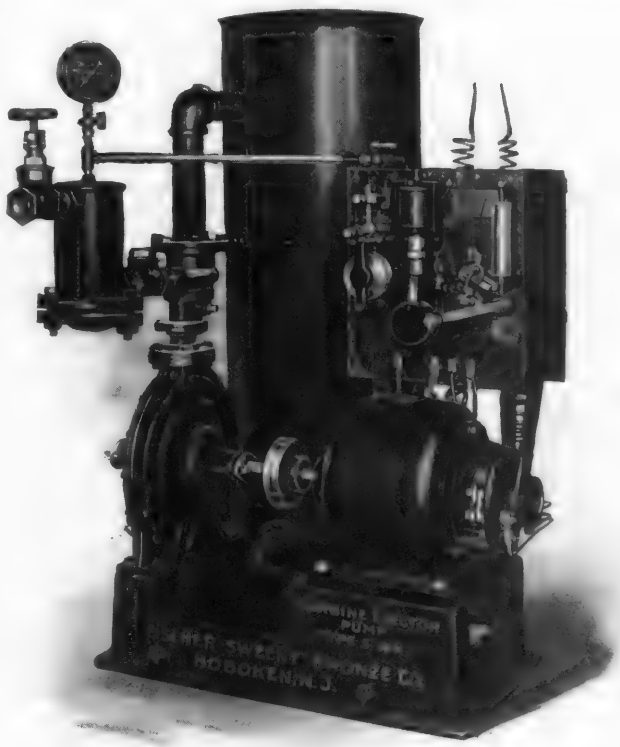

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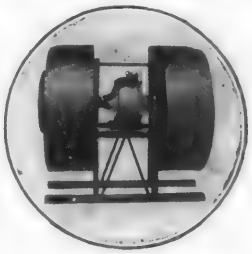

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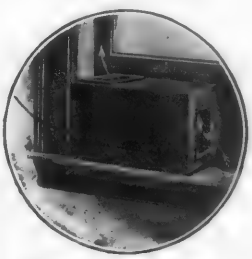

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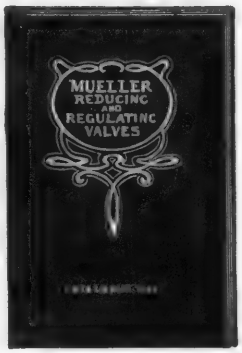

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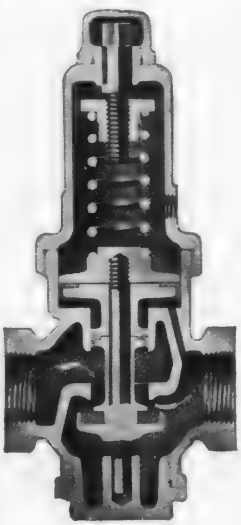

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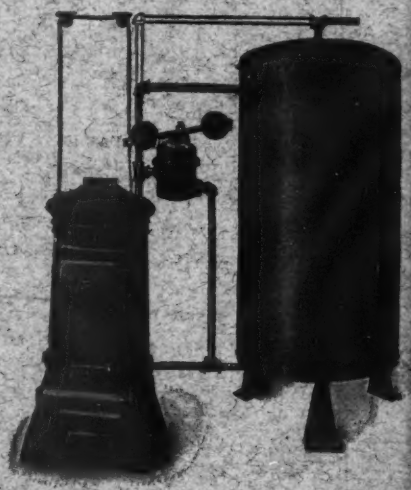

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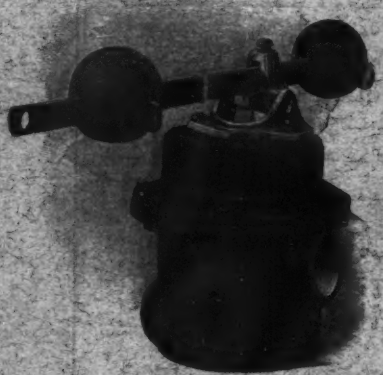
Ideal Sylphon Water Regulators



Simple, compact, self-contained. For Public Buildings, Schools, Manufactories, Hotels, Bottling Works, Breweries, Laundries, Refineries, Garages, etc.

for Tank Heaters and Water Boilers, are absolutely original and different from any other device. They are entirely self-contained and automatic—no personal attention, winding, electricity or other outside forces are necessary to their operation. They have no perishable parts—nothing to wear out—and will last as long as the building. Every man in your town who has had experience with old-fashioned tank heater regulation is a live prospect for a Sylphon sale and a good summer profit. Don't wait to be called in. Send us a list of prospects and let us mail printed matter for you.

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